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COAST FISHES

PART II. THE PATAGONIAN REGION

By

J. R. NORMAN

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COAST FISHES

PART II. THE PATAGONIAN REGION[1]

(INCLUDING THE STRAITS OF MAGELLAN AND THE FALKLAND ISLANDS)

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(Plates I–V; Text-figs. 1–76)

INTRODUCTION

THE collections dealt with in this part of the report on the coast fishes include more than 3000 specimens, representing 84 species: of these 14 species prove to be new to science and 15 others were previously unrepresented in the National collection. The great majority of the specimens were obtained by the R.R.S. 'William Scoresby' during the trawling surveys of 1927–8 and 1931–2, the detailed reports of which are to be prepared by Mr E. R. Gunther. A certain number of specimens collected by the R.R.S. 'Discovery' in the neighbourhood of the Falkland Islands, and some others obtained by the 'William Scoresby' during her investigation of the Peru Current in 1931 are also included. The expedition has also received a fine series of littoral fishes from the Falkland Islands collected by Mr A. G. Bennett, with the assistance of Mr J. E. Hamilton. Mr Bennett's collection is accompanied by detailed notes on the occurrence and habits of the fishes, which have proved of great value, and many of which are included in this report. I take this opportunity of offering him my sincere thanks for his interest and assistance.

In order to compare the fish fauna of the Patagonian Region with that of the coasts of Argentina and Chile respectively it became necessary to obtain further collections from these countries, as the material in the British Museum, especially from the Chilean coast, was far from adequate. Dr Tomás L. Marini, Jefe División Piscicultura, Ministerio de Agricultura, Buenos Aires, has sent me a certain number of specimens taken off the coast of Buenos Aires; Mr E. J. MacDonagh, Jefe del Departamento de Zoología, Museo de la Plata, has sent examples of several species from northern Patagonia described by him, including several paratypes; and I have received as an exchange from the United States National Museum a small collection of fishes from Patagonia and Chile, being a part of that obtained by the 'Albatross' during her voyage through the Straits of Magellan in 1888. With regard to the Chilean coast, through the kind interest of Mr V. Cavendish Bentinck, of the British Embassy at Santiago, I have received several very interesting collections of marine fishes, which

[1] For details as to the limits of this region see p. 137.

include examples of some species previously unrepresented in the British Museum collection. The following gentlemen were responsible for the collection and preservation of the specimens: Señor Luis A. Lagos, Director-General of Fisheries; Professor Carlos Oliver Schneider, Director of Concepción Museum; and Señor Pedro Golusda, Inspector of Fisheries at Lautaro. Mr Cavendish Bentinck has also sent a small but valuable series of specimens from Juan Fernandez, which had been made by Dr Juan Lengerich. To all the above-mentioned gentlemen and institutions my thanks are due and are gratefully tendered. Thanks are also due to the members of the Discovery Committee for permission to study these collections and to prepare this report, to Dr C. Tate Regan, F.R.S., for much help and advice given during its preparation, and to Lieut.-Col. W. P. C. Tenison, D.S.O., for the care and skill that he has displayed in the preparation of the illustrations. The colour sketches reproduced on Plate I are the work of Mr E. R. Gunther, who was in charge of the third of the trawling surveys made by the R.R.S. 'William Scoresby'.

SYSTEMATIC PART

PETROMYZONIDAE

Geotria australis, Gray.

1851, *Chondropt.*, p. 142, pl. ii; Regan, 1911, *Ann. Mag. Nat. Hist.* (8) VII, p. 197; Lahille, 1915, *Anal. Mus. Nac. B. Aires*, XXVI, p. 370, figs.; Maskell, 1929, *Trans. N. Zealand Inst.*, LX, p. 167, figs.

Hab. Australia; New Zealand; Argentina, Patagonia and Chile.

No specimens of this species were obtained by the expedition, but Mr Hamilton has sent one to the British Museum, collected by him in the Falkland Islands in 1931–2. This is 395 mm. in total length, but it is not stated whether it was taken in the sea or in fresh water. I have also seen a young individual, 123 mm. long, from a brook in central Tierra del Fuego. Maskell has demonstrated that there is only one species of *Geotria* in New Zealand, and that various stages in its life history had formerly been regarded as distinct species. He suggests that this is perhaps the case also in Australia, Tasmania and South America. Direct comparison of South American material of all stages of growth with similar material from Australia and New Zealand is badly required.

MYXINIDAE

Most authors have recognized only one species of *Myxine* from this region, and the inadequacy of many of the descriptions has made it impossible to give complete synonymies for the three species now defined. Lacepède's *Muraenoblenna olivacea*, from Magellan, is an undoubted *Myxine*, but cannot be referred with certainty to any of the three species. In 1842, Jenyns described *M. australis* from specimens collected by the 'Beagle' in Goree Sound and other parts of Tierra del Fuego, and although he makes no mention of such important characters as the number of teeth and pores,

I have been able to examine the type[1] of the species and to ascertain its identity. In the eighth volume of his catalogue, published in 1870, Günther listed six examples of *M. australis*, collected at Sandy Point and Tyssen Islands by Dr R. O. Cunningham, and also described a new species (*M. affinis*), based upon a single dried and shrivelled example from an unknown locality.[2] In his synopsis of the genus published in 1899, Garman recognized two closely related species from this region, distinguished chiefly by differences in the numbers of teeth and pores and in the shape of the labrum (i.e. the two forms here identified as *australis* and *affinis*), as well as a third (*M. tridentiger*), distinguished by having the anterior three teeth confluent in each upper series.[3] The species described by Garman as *acutifrons*, however, proves to be the same as Jenyns' *australis*, and his *australis* is clearly the form here identified as *affinis*. In his revision of the genus published in 1913, Regan recognized only *tridentiger* and *australis* from this region, regarding *acutifrons* and *affinis* as synonyms of the latter species. Smitt (1898), Vaillant (1888), and others have regarded the southern Hag-fish as a mere variety of *Myxine glutinosa*, Linnaeus, of the northern hemisphere, and this is the view taken by Lahille, who in 1915 gave a detailed description of a number of specimens of *Myxine* from Ushuaia under the name *M. glutinosa* var. *olivacea*. Judging from his description, these specimens were of the species here named *M. affinis*. It is true that *M. australis*, Jenyns, is very closely related to *M. glutinosa*, but the latter appears to have a longer and more slender body and a labrum of somewhat different shape.

Numbers of teeth in M. australis *and* M. affinis

M. australis		*M. affinis*	
Length (mm.)	Teeth	Length (mm.)	Teeth
100	8–8	165	9–9
230	8–8	290	10–9
230	8–9	305	10–10
230	8–9	320	10–10
245	8–9	325	10–10
250	8–9	330	11–11
250	8–9	340	10–10
250	8–9	340	10–10
275	8–9	370	10–10
285	8–9	375	10–11
285	8–9	400	10–10
285	8–10	420	10–10
290	8–9	430	11–11
320	8–9	490	11–11
360	8–9		
380	8–9		

[1] I am indebted to Dr C. Forster Cooper for the loan of this fish, which is preserved in the Zoological Museum at Cambridge. It is 285 mm. long, and is in fair condition, although it is difficult to count the pores along the body.

[2] It is quite impossible to count the pores on the body in the type of this species, but as the teeth number 11/11 it has been assumed that this is the same as the form here described with dark coloration, short broad labrum, and higher numbers of teeth and pores.

[3] The fusion of three teeth is given by Günther (1870) as a character of *M. australis*, but occurs in only one example from Sandy Point, the specimen selected by Regan as the type of *M. tridentiger*.

Numbers of abdominal pores in M. australis *and* M. affinis

M. australis		*M. affinis*
×	56	—
×	57	—
×	58	—
× ×	59	—
× × × ×	60	—
× ×	61	—
—	62	—
×	63	× × × ×
×	64	× ×
—	65	—
—	66	—
—	67	× ×
—	68	×
—	69	×

Myxine australis, Jenyns.

1842, *Zool.* '*Beagle*', Fish., p. 159; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 85.
Myxine australis (part), Günther, 1870, *Cat. Fish.*, VIII, p. 511; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 473; Regan, 1913, *Ann. Mag. Nat. Hist.* (8) XI, p. 397.
Myxine acutifrons, Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 347, pl. lxviii, fig. 6.

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Seine net attached to back of trawl, 87–82 m.: 1 specimen, 100 mm.

St. WS 776. 3. xi. 31. 46° 18′ 15″ S, 65° 02′ 15″ W. Conical dredge, 107 m.: 1 specimen, 230 mm.

St. WS 789. 3. xii. 31. 45° 17′ S, 64° 22′ W. Seine net attached to back of trawl, 95–93 m.: 7 specimens, 120–330 mm.

Six branchial pouches. Eight teeth in the first series, 8 or 9 in the second, the 2 most anterior united. Pores 30–36 + 56–64 + 9–12. Length of head $3\frac{1}{4}$ to about $3\frac{3}{5}$ in the total length. Brownish or olivaceous above, paler below.

Hab. Coasts of Patagonia and southern Chile; Falkland Islands; South Shetland Islands.

In addition to the above, Mr Bennett has sent 2 specimens from the Falklands: one (360 mm.) from Stanley Harbour, Low Spring Tide, collected in October 1932; the other (380 mm.) from Salvador Waters, collected in April 1932. Mr Hamilton has sent another from Stanley Harbour (360 mm.), collected in January 1925. There are 6 specimens (250–320 mm.) in the British Museum from the South Shetlands, Falklands, Straits of Magellan, Tyssar Islands and Cockle Cove.

Myxine affinis, Günther. "Chkoutaouélik."

? *Muraenoblenna olivacea*, Lacepède, 1803, *Hist. Nat. Poiss.*, V, p. 652.
Myxine affinis, Günther, 1870, *Cat. Fish.*, VIII, p. 511.
Myxine australis (part), Günther, 1870, *t.c.*, p. 511; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 473; Regan, 1913, *Ann. Mag. Nat. Hist.* (8) XI, p. 397.
Myxine australis, Vaillant, 1888, *Miss. Sci. Cap Horn.*, VI. Zool., Poiss., p. 32; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 334; Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 345, pl. lxviii, fig. 8; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 419.
Myxine glutinosa forma *australis*, Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 75.
Myxine glutinosa var. *olivacea*, Lahille, 1915, *Anal. Mus. Nac. B. Aires*, XXVI, p. 362, figs. 1–3.

St. WS 582. 30. iv. 31. 53° 42′ 30″ S, 70° 55′ W. Dip net, 12 m.: 4 specimens, 290–420 mm.

Six branchial pouches. 10 or 11 (9 in young) teeth in the first series, 9 to 11 (generally 10 or 11) in the second, the 2 most anterior united. Pores 28–34 +63–69 +9–13. Length of head $3\frac{1}{4}$ to $3\frac{3}{4}$ in the total length. Labrum shorter and more obtusely pointed than in *M. australis*. Coloration of freshly preserved specimens purplish brown, with a narrow area of sharply contrasted yellowish white along the ventral surface.

Hab. Coasts of Patagonia and southern Chile.

In addition to the above there are 8 specimens (165–490 mm.) in the British Museum from Orange Bay, Cape Gregory, Puerto Bueno, Messier Channel and Sandy Point, including the type of the species.

Myxine tridentiger, Garman.

Myxine australis (part), Günther, 1870, *Cat. Fish.*, VIII, p. 511; Günther, 1887, *Deep-Sea Fish. 'Challenger'*, p. 267.

Myxine tridentiger, Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 345; Regan, 1913, *Ann. Mag. Nat. Hist.* (8) XI, p. 396.

Six branchial pouches. Ten teeth in each series, the 3 most anterior in the first series and the 2 most anterior in the second series united. Pores 22 +62 +9. Length of head $3\frac{2}{3}$ in the total length. Left branchial aperture widely separated from that of the oesophageal duct.

Hab. Straits of Magellan.

Known only from the unique holotype, 460 mm. in total length, from Sandy Point.

LAMNIDAE

Cetorhinus maximus (Gunner).

During the summer of 1926 or 1927 a large shark was found dead on the north coast of East Falkland, north by west of Stanley, about midway between McBride's Head and the entrance of Salvador Waters. The length was said to be more than 30 ft. A strip of teeth was taken from the jaws and sent to the British Museum for identification.[1] This was an undoubted Basking Shark, the southern representative of the common *Cetorhinus maximus* of the northern hemisphere, and may prove to be a distinct species.

A shark observed by Mr J. E. Hamilton in 1936 probably belongs to this species. He says:

> I watched it for about forty minutes as it cruised about on the edge of a *Macrocystis* bed off Cape Dolphin. It had an anterior dorsal fin which may have been thirty inches in height and a much smaller posterior one. The colour was very dark grey or black with a pale mark on the larger dorsal fin. I estimate the length of the fish at well over twenty feet.

The Basking Shark has been recorded from various localities in Australia and New Zealand,[2] but I can find only one record from southern South America.[3]

[1] Norman, 1933, *Proc. Zool. Soc.*, p. 1121.

[2] Whitley, 1934, *Mem. Queensland Mus.*, X, p. 196. Whitley has replaced the name *Cetorhinus*, Blainville (1816) by *Halsydrus*, Fleming (1809), but as the latter name was given to a supposed "sea serpent" of the Orkney Islands, which afterwards was said to be a Basking Shark, there would appear to be little justification for interfering with a well-established name. *Tetroras*, Rafinesque (1810), is of very doubtful validity.

[3] Lahille, 1928, *Anal. Mus. Nac. B. Aires*, XXXIV, p. 325—Golfo Nuevo, Argentina.

SCYLIORHINIDAE

Scyliorhinus (Halaelurus) bivius (Smith).

"Kayachaï" or "Kayachaya"; "Pintarroja".

Scyllium bivium, Smith, 1837, *Proc. Zool. Soc.*, p. 85 (*nomen nudum*); Müller and Henle, 1841, *Plagiost.*, p. 8; Duméril, 1865, *Hist. Nat. Poiss.*, I, p. 321; Günther, 1870, *Cat. Fish.*, VIII, p. 405.

Scyllium brevicolle, Philippi, 1887, *An. Univ. Chile*, LXXI, p. 558, pl. vii, fig. 5.

Scyllium gayi, Philippi, 1887, *Zool. Garten*, p. 86.

Scyllium chilense (*non* Guichenot), Günther, 1880, *Shore Fish.* '*Challenger*', p. 19; Vaillant, 1888, *Miss. Sci. Cap Horn.*, VI. Zool., Poiss., p. 10, pl. i, fig. 1; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 608; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 6; Dollo, 1904, *Rés. Voy.* '*Belgica*', Poiss., p. 79.

Scylliorhinus chilensis, Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 72; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 4; Roule, Angel and Despax, 1913, *Deux. Expéd. Antarct. Franç.*, Poiss., p. 2.

Scylliorhinus chilensis (part), Delfin, 1901, *Cat. Peces Chile*, p. 15.

Scyliorhinus bivius, Regan, 1908, *Ann. Mag. Nat. Hist.* (8) I, p. 461; Lahille, 1921, *Enum. Peces Cart. Argent.*, p. 12.

Halaelurus bivius, Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 86.

Scylium bivium, Lahille, 1928, *Anal. Mus. Nac. B. Aires*, XXXIV, p. 302, pl. ii, text-figs. 3–5.

St. WS 583. 2. v. 31. 53° 39′ S, 70° 54′ 30″ W. Small beam trawl, 14–78 m.: 3 specimens, 125–170 mm.

St. WS 586. 8. v. 31. 48° 27′ 30″ S, 74° 23′ 30″ W. Hand line, 22 m.: 2 male specimens, 395, 410 mm.

Snout obtusely pointed, its praeoral length about equal to distance between outer edges of nasal flaps; latter without cirri, widely separated, acutely pointed and with notched posterior edges; longitudinal diameter of eye $3\frac{4}{5}$ to $4\frac{1}{2}$ in distance from tip of snout to first gill-opening. Lower lip not overlapped by the upper; a distinct labial fold at the angle of the mouth, extending along the lower jaw about $\frac{1}{2}$ the distance to the symphysis. Denticles all small; no enlarged tubercles on the back. First dorsal a little smaller than second, originating above end of base of pelvics; base $\frac{1}{3}$ to $\frac{2}{5}$ of its distance from the second. Base of anal $1\frac{1}{2}$ to $1\frac{4}{5}$ as long as that of first dorsal, shorter than its distance from caudal. Pectoral with rounded angles, extending $\frac{3}{5}$ to $\frac{2}{3}$ the distance from its origin to that of pelvics. Pelvic fins not united. Back with black blotches or transverse bars; upper parts with rounded blackish spots and usually with some pale spots.

Hab. Coasts of Argentina, Patagonia and southern Chile.

In addition to the above, there are 8 specimens (280–750 mm.) in the British Museum from various localities in the Straits of Magellan, including the type of the species (a stuffed skin). Two egg-capsules collected by the 'Challenger' probably belong to this species.

This species is closely related to *S. chilensis* (Guichenot), from the coasts of Chile and Peru, in which the anal fin is $1\frac{1}{3}$ times as long as the first dorsal, which measures $\frac{2}{5}$ to nearly $\frac{1}{2}$ of its distance from the second, the longitudinal diameter of the eye is

about 6 in the distance from tip of snout to first gill-opening, there are generally two series of tubercles on the back from the head to the first dorsal fin, and the nasal flaps have a different shape. The exact range of *S. chilensis* is doubtful, but it probably does not extend southwards into the Patagonian region as here defined. The British Museum has received nine examples of this species from Lota, through Mr V. Cavendish Bentinck.

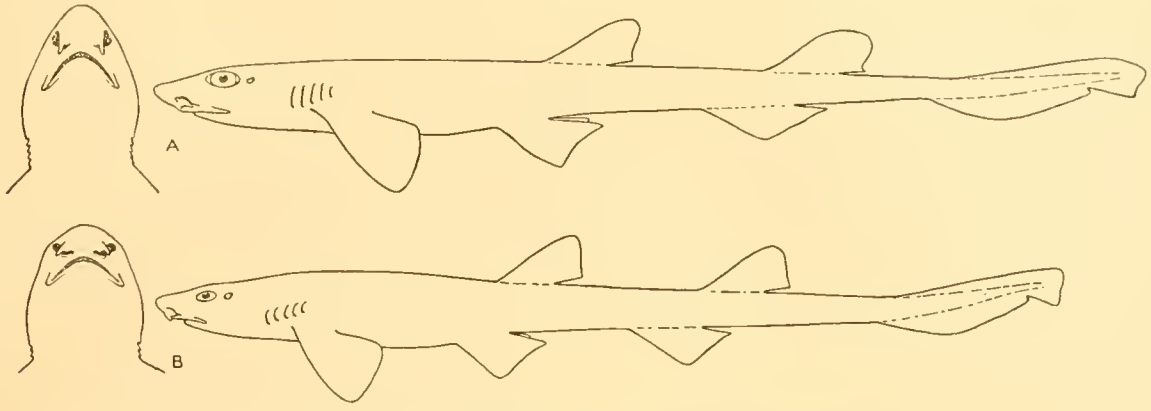

Fig. 1. A, *Scyliorhinus* (*Halaelurus*) *bivius*; B, *S.* (*Halaelurus*) *chilensis*. × ⅓.

SQUALIDAE

Squalus lebruni (Vaillant). "Kaïss"; "Kaïgis".

?? *Squalus fernandinus*, Molina, 1782, *Sag. stor. nat. Chili*, p. 229.
Acanthias vulgaris (part), Günther, 1870, *Cat. Fish.*, VIII, p. 418.
Acanthias vulgaris (*non* Risso), Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 473.
Acanthias lebruni, Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 13, pl. i, fig. 2.
Squalus lebruni, Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 6; Delfin, 1901, *Cat. Peces Chile*, p. 22.
Squalus acanthias, Delfin, 1901, *t.c.*, p. 21; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 5.
Squalus fernandinus, Regan, 1908, *Ann. Mag. Nat. Hist.* (8) II, p. 46; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 85; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 420; Lahille, 1921, *Enum. Peces Cart. Argent.*, p. 16; Phillipps, 1929, *N. Zealand J. Sci. Tech.*, X, p. 223, fig. 3.
Squalus kirkii, Phillipps, 1931, *N. Zealand J. Sci. Tech.*, XII, p. 361.

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 1 male specimen, 600 mm.

Very closely allied to *S. acanthias* of the North Atlantic and Mediterranean, but with a shorter snout, the praeoral length equal to or less than the distance from eye to first gill-opening, the praeocular length about equal to the distance from anterior edge of eye to spiracle. Dorsal fin-spines longer, and pale spots on body larger than in *S. acanthias*.

Hab. Southern Australia and Tasmania; New Zealand; Argentina, Patagonia and Chile.

I have compared the above specimen with 3 (550–800 mm.) from Tasmania and a male specimen (760 mm.) of *S. kirkii* received from Mr W. J. Phillipps and am unable

to detect any important differences. There would, therefore, seem to be only one spotted species of Spiny Dogfish in the southern hemisphere. I am unable to say whether the unspotted form from Australia and Tasmania (*S. megalops*) is identical with that from New Zealand (*S. griffini*) and that from South America (*S. fernandezianus*),

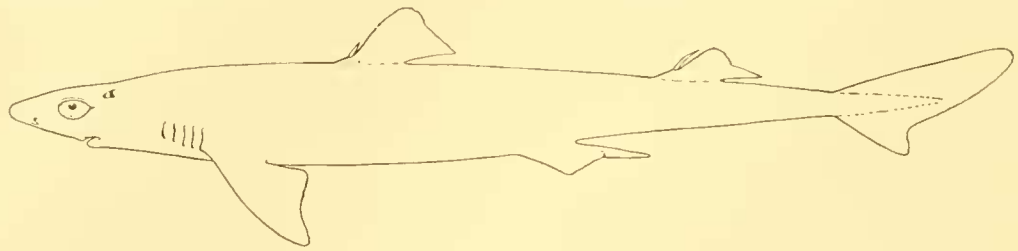

Fig. 2. *Squalus lebruni*. $\times \frac{1}{5}$.

as the material in the British Museum collection consists only of a few adult and half-grown specimens from Tasmania, some young examples from New Zealand, and a stuffed specimen of 900 mm. from Juan Fernandez. For the present, the species, which may occur in the Patagonian region, may be known as *S. fernandezianus* (Guichenot).

SQUATINIDAE

Squatina armata (Philippi).

Rhina armata, Philippi, 1887, *An. Univ. Chile*, LXXI, p. 561, pl. vii, fig. 1.

Folds at sides of head not produced into lobes. Outer nasal flap with entire edges; inner flap with two simple prolongations, the outer of which has a broad fringed lobe at its base. Distance between the spiracles about equal to the interocular width, which is $4\frac{1}{2}$ times the longitudinal diameter of the eye. Outer angle of pectoral nearly a right angle; distance from anterior angle to posterior end of base about $\frac{3}{5}$ the extreme length of the fin. Pelvic not reaching the vertical from origin of first dorsal. Width of tail (at the base) about $\frac{1}{4}$ of its length. Base of first dorsal about $\frac{1}{2}$ its height, which is a little more than its distance from the second; second dorsal a little shorter, but scarcely lower than the first; interspace between the dorsals a little less than the distance from second dorsal to caudal, much less than the distance from base of tail to origin of first dorsal. Posterior edge of caudal fin somewhat notched, the upper lobe nearly vertically truncate, the lower rounded. Upper surface with small, pointed denticles, each with 3 keels; a middorsal series of large denticles, with one or more rows of smaller enlarged denticles on either side; small groups of spines in front of and behind the eyes, and two small groups on tip of snout on either side of median line of head; a pair of spines, well separated from each other, between the spiracles; small imbricated denticles at outer edges of paired fins, extending on to their lower surfaces and, on the pectoral, forming an inferior marginal strip equal in width to about $\frac{1}{3}$ the interocular space; denticles on lower surface of tail not extending forward to its base; lower surface of head and abdomen naked. Greyish brown, with a few small round whitish spots.

Hab. Argentina; Chile.

Described from two specimens, a male of 470 mm. and a female of 450 mm.; presented to the British Museum by Dr Tomás L. Marini.

It is with some hesitation that I have identified these specimens with the Chilean species, known only from Philippi's rather poor description and figure.[1] It appears to be nearly related to *S. aculeata* (Cuvier), differing chiefly in the smaller eye, less complicated nasal flaps, shorter pelvic fins, differently shaped pectorals, and in the coloration. From *S. japonica*, Bleeker, another species with a median series of enlarged denticles, it may be readily distinguished by having the distance between the spiracles equal to instead of greater than the interocular width.

TORPEDINIDAE

Discopyge tschudii, Heckel.

1846, in Tschudi, *Fauna Peru.*, Ichth., p. 33, pl. vi; Duméril, 1865, *Hist. Nat. Poiss.*, I, p. 521; Günther, 1870, *Cat. Fish.*, VIII, p. 454; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 10; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 332, pl. xxi, fig. 14; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 303.

St. WS 776. 3. xi. 31. 46° 18′ 15″ S, 65° 02′ 15″ W. Commercial otter trawl, 107–99 m.: 4 female specimens, 250–305 mm.

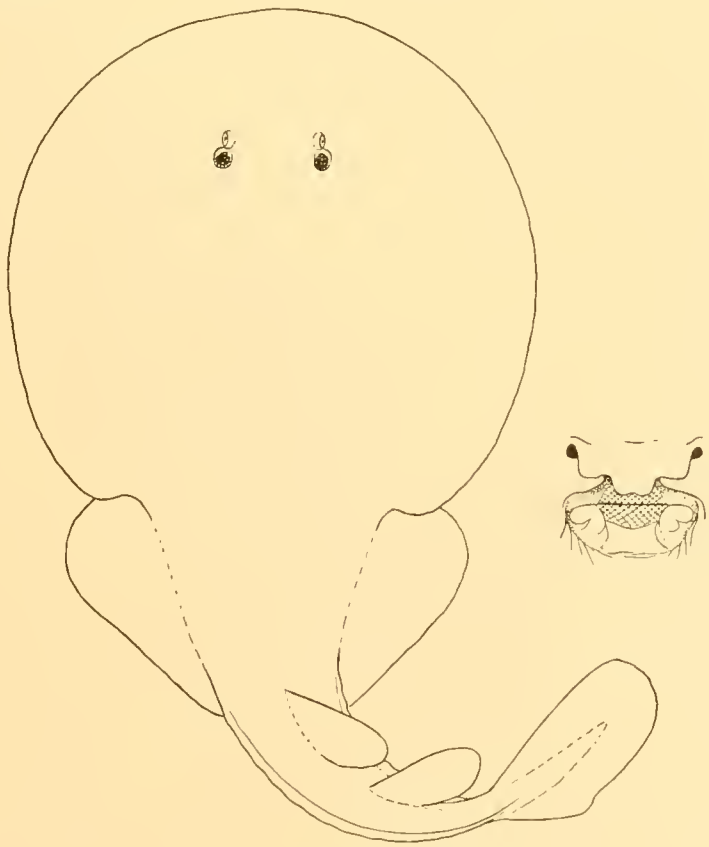

Fig. 3. *Discopyge tschudii*. × ½.

[1] The specimen from Peru described by Evermann and Radcliffe (1917, *Bull. U.S. Nat. Mus.*, XCV, p. 11) may have belonged to this species.

Hab. Coasts of Argentina, Patagonia, Chile and Peru.

This species, which was previously unrepresented in the British Museum collection, appears to range from the mouth of the Rio Plata to the middle of the coast of Peru. In addition to the above, I have received a female, 320 mm. long, from Buenos Aires (Marini), and a male of 410 mm. and 2 females of 270 and 320 mm. from Coronel, Chile (Cavendish Bentinck).

RAJIDAE

A large series of specimens of *Raja* and *Psammobatis* was obtained during the trawling surveys, and, except for one of the new species of *Raja*, which is based upon a single example, each species is represented by a fairly good range of material. The following egg-capsules and embryos are indeterminable and may belong to either genus:

St. WS 233. 5. vii. 28. 49° 25′ S, 59° 45′ W. Commercial otter trawl, 185–175 m.: 1 egg-capsule.

St. WS 583. 2. v. 31. 53° 39′ S, 70° 54′ 30″ W. Small beam trawl, 14–78 m.: 2 egg-capsules, 2 embryos.

St. WS 764. 17. x. 31. 44° 38′ 45″ S, 61° 49′ 30″ W. Commercial otter trawl, 110–104 m.: 1 egg-capsule.

St. WS 776. 3. xi. 31. 46° 18′ 15″ S, 65° 02′ 15″ W. Commercial otter trawl, 107–99 m.: 1 embryo.

St. WS 787. 7. xii. 31. 48° 44′ S, 65° 24′ 30″ W. Commercial otter trawl, 106–110 m.: 1 embryo.

St. WS 800. 21–22. xii. 31. 48° 15′ 45″ S, 62° 09′ 52″ W. Commercial otter trawl, 139–137 m.: 1 embryo.

St. WS 805. 6. i. 32. 50° 10′ 15″ S, 63° 29′ W. Commercial otter trawl, 148 m.: 2 embryos.

St. WS 825. 28–29. i. 32. 50° 50′ S, 57° 15′ 15″ W. Commercial otter trawl, 135–144 m.: 1 embryo.

Revision of the Patagonian species of *Raja*

Key to the species[1]

I. Terminal parts of lateral line tubules on lower surface pigmented, appearing as small blackish spots and streaks; snout long, acutely pointed, length $3\frac{1}{4}$ to $3\frac{3}{4}$ ($2\frac{3}{4}$ to $3\frac{1}{4}$ in young) times eye + spiracle; vent much nearer end of tail than tip of snout; a single large nuchal spine ... ... *flavirostris.*

II. No pigment spots or streaks on lower surface; snout shorter, not acutely pointed, length never more than $3\frac{1}{4}$ times eye + spiracle.

A. One to three pairs of enlarged scapular spines; spines scattered over disc of moderate size and fairly well separated; a continuous series of median spines from nuchal region to first dorsal fin.

1. Ocular spines and median spines on disc and tail very strong, ribbed; spines scattered over disc rather large, with stellate bases; 12 to 15 median spines on back; mixopterygia short, stout ... ... *doello-juradoi.*

2. Ocular spines and median spines on disc and tail smaller, not ribbed; spines scattered over disc smaller, without distinctly stellate bases; 25 to 42 median spines on back; mixopterygia rather long, slender.

a. Small spines scattered over greater part of disc; eye + spiracle $1\frac{2}{5}$ to $1\frac{3}{4}$ in length of snout ... ... *macloviana.*

[1] I am unable to place *R. cynosbatus* from the published description (Philippi, 1896, *An. Univ. Chile*, XCIII, p. 385). The type was a male, 500 mm. long (width of disc 310 mm.).

b. Small spines mainly confined to anterior parts of disc and middle of back; eye + spiracle 2 to $2\frac{2}{5}$ in length of snout.

(i) Ocular spines present; 26 to 30 median spines on back; 2 (or 3) pairs of scapular spines; coloration mottled, each pectoral with a large double ocellus-like spot ... ... *magellanica.*

(ii) No ocular spines; 42 median spines on back; one pair of scapular spines; coloration nearly uniformly greyish brown ... ... *multispinis.*

B. No enlarged scapular spines; spines scattered over disc smaller and closer together; no ocular spines.

1. Internasal width $2\frac{1}{2}$ to $2\frac{3}{4}$ in praeoral length of snout; eye + spiracle $2\frac{2}{3}$ to $3\frac{1}{3}$ in length of snout ... ... *scaphiops.*

2. Internasal width twice or less than twice (occasionally $2\frac{1}{5}$) in praeoral length of snout; eye + spiracle $1\frac{3}{4}$ to about 3 in length of snout.

a. Disc with small, rounded, white spots; median spines on tail very strong; median series on back continuous, or 2 or 3 nuchal spines separated from remainder; mixopterygia rather long, slender, scarcely expanded distally, without projecting process ... ... *albomaculata.*

b. Disc without small, round, white spots; median spines less strong; mixopterygia (in *brachyurops*) rather shorter, expanded distally, with a small projecting process.

(i) Vent (except in young) nearer to end of tail than to tip of snout; tail uniformly white below or with a few greyish spots; 20 to 34 rows of teeth in upper jaw ... ... *brachyurops.*

(ii) Vent nearer to tip of snout than to end of tail; tail with parts of the lower surface stained with greyish brown; 30 to 36 rows of teeth in upper jaw *griseocauda.*

Raja flavirostris, Philippi.

?? *Raia chilensis*, Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 367; Philippi, 1892, *An. Mus. Nac. Chile*, 1, Zool., p. 1.

Raja flavirostris, Philippi, 1892, *t.c.*, p. 3, pl. i, fig. 2; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 361; Fowler, 1927, *Proc. Acad. N.S. Philad.*, LXXVIII, p. 277.

Raja oxyptera, Philippi, 1892, *t.c.*, p. 4, pl. ii, fig. 1; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 6.

Raja latastei, Delfin, 1902, *Revist. Chil.*, VI (4), p. 264, pl. xi.

Raia stabuliforis, Marini, 1928, *Physis*, IX, p. 137, fig. 3.

Raia brevicaudata, Marini, 1933, *Physis*, XI, p. 329.

St. WS 77. 12. iii. 27. 51° 01′ S, 66° 31′ 30″ W. Commercial otter trawl, 110–113 m.: 1 female specimen, 480 mm. (width of disc 400 mm.).

St. WS 79. 14. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 1 male specimen, 365 mm. (width of disc 320 mm.), 1 female specimen, 345 mm. (width of disc 285 mm.).

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 109–108 m.: 1 male specimen, 285 mm. (width of disc 225 mm.).

St. WS 214. 31. v. 28. 48° 25′ S, 60° 40′ W. Commercial otter trawl, 208–219 m.: 1 female specimen, 310 mm. (width of disc 258 mm.).

St. WS 236. 6. vii. 28. 46° 55′ S, 60° 40′ W. Commercial otter trawl, 272–300 m.: 1 male specimen, 610 mm. (width of disc 490 mm.).

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Commercial otter trawl, 87–82 m.: 1 male specimen, 180 mm. (width of disc 140 mm.).

St. WS 765. 17. x. 31. 45° 07′ S, 60° 28′ 15″ W. Commercial otter trawl, 113–118 m.: 1 male specimen, 360 mm. (width of disc 280 mm.).

St. WS 789. 13. xii. 31. 45° 17′ S, 64° 22′ W. Commercial otter trawl, 95–93 m.: 2 male specimens, 325–330 mm. (width of disc 255, 260 mm.).

St. WS 790. 14. xii. 31. 45° 28′ 52″ S, 63° 40′ 37″ W. Commercial otter trawl, 99–101 m.: 3 male specimens, 240–405 mm. (width of disc 180–335 mm.), 5 female specimens, 250–480 mm. (width of disc 160–380 mm.).

St. WS 792. 15. xii. 31. 45° 49′ 30″ S, 62° 20′ 15″ W. Commercial otter trawl, 102–106 m.: 1 female specimen, 270 mm. (width of disc 210 mm.).

St. WS 815. 13. i. 32. 51° 51′ 45″ S, 65° 44′ W. Commercial otter trawl, 132–162 m.: 1 male specimen, 720 mm. (width of disc 520 mm.).

St. WS 835. 2. ii. 32. 53° 05′ 30″ S, 68° 06′ 30″ W. Small beam trawl, 14–16 m.: 1 male specimen, 165 mm. (width of disc 120 mm.).

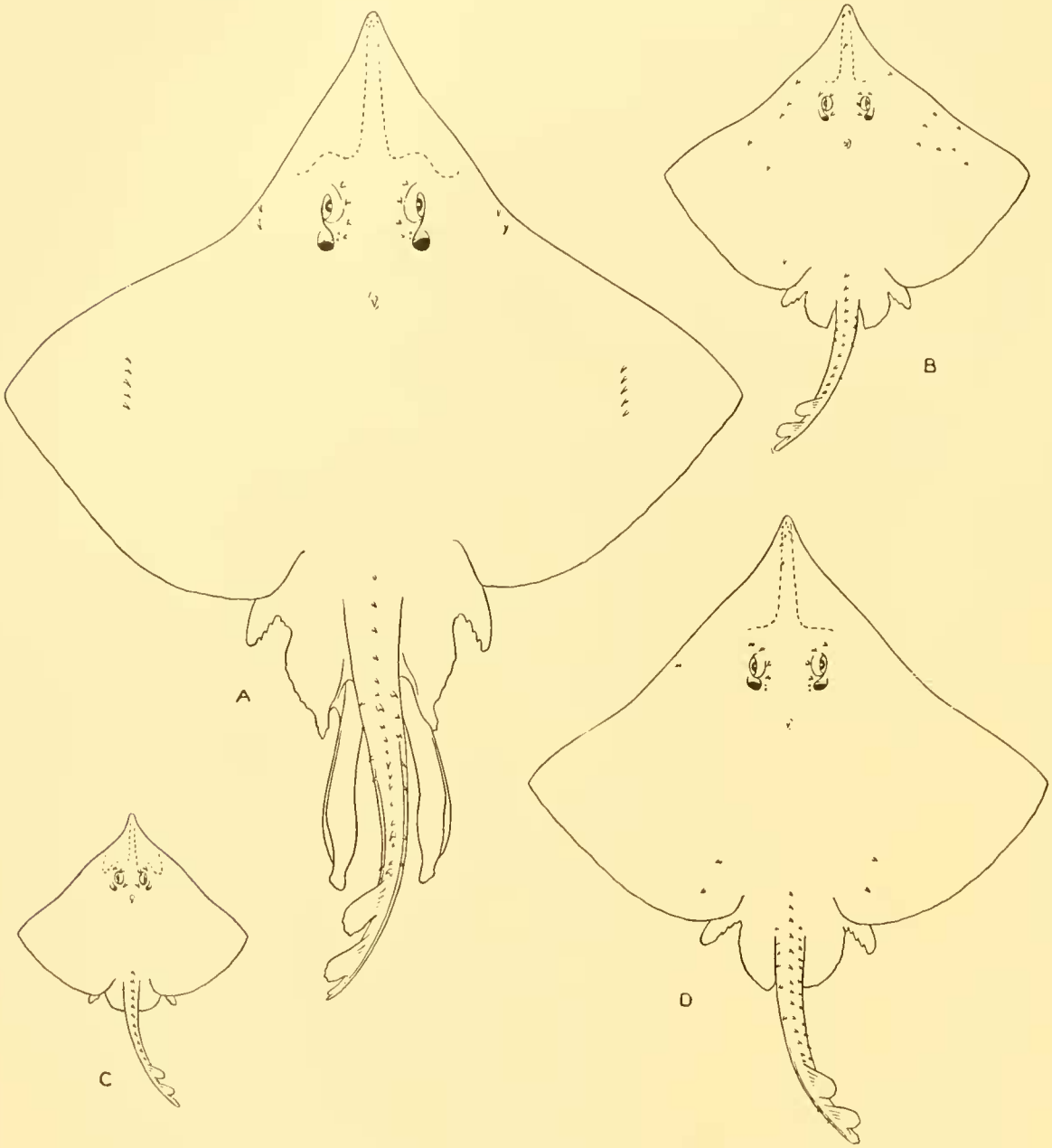

Fig. 4. *Raja flavirostris*. A, adult male; B, half-grown male; C, young male; D, female. $\times \frac{1}{5}$.

Disc broader than long, its width $\frac{3}{4}$ to more than $\frac{4}{5}$ of the total length; anterior margins a little undulated; outer angles obtusely pointed, nearly forming right angles. Vent much nearer to end of tail than to tip of snout. Snout acutely pointed, its length $\frac{1}{5}$ (young) to more than $\frac{1}{4}$ width of disc and $2\frac{3}{4}$ (young) to $3\frac{3}{4}$ times diameter of eye + spiracle, which is about equal to interorbital width. Internasal width about 2 in praeoral length of snout. Mouth nearly straight; teeth fairly close-set, with more or less pointed crowns; 25 to 35 rows in the upper jaw. Upper surface mainly smooth, but both sexes sometimes with a few scattered spines on the disc and on the rostral process, these being more strongly developed in males; rostral process in large specimens more or less covered with asperities; generally 1 (sometimes 3 to 5) strong praeocular spine, another above the middle of the orbit, 1 postocular spine, and 1 or 2 smaller ones (absent in young) above each spiracle; a single strong median nuchal spine; no scapular spines; no median spines on disc, but a series of 12 to 23 enlarged spines extending from opposite the hinder angle of the pectoral fin to the first dorsal fin; all but very young specimens with an irregular row of spines on each side of the median series on the tail, and sometimes with a few additional spines at the edges of the tail; a large male has a single series of alar spines. Lower surface smooth, except for rough areas on rostral process and on margins of snout; these areas increase in size with age, and in large specimens the whole lower surface of the snout is rough; sometimes a few scattered buckler-like spines on disc. Dorsal fins close to end of tail, separated by a spine. Brownish or greyish; more or less uniform or with numerous indistinct pale spots; some larger specimens with traces of a large circular ocellus near the middle of the base of each pectoral; lower surface yellow or white; sometimes greyish; terminal parts of lateral line tubules pigmented, appearing as small blackish spots and streaks.

Hab. Argentina; Patagonian-Falklands region; Straits of Magellan; Chile.

In addition to the above, I have received a specimen of *R. brevicaudata* from Buenos Aires (Marini). This is a male, 450 mm. in total length (width of disc 360 mm.). I have been unable to examine any Chilean material of this long-snouted form, but have little doubt that the specimens described here are identical with the large male and female described by Philippi as *Raja oxyptera* and *R. flavirostris* respectively. *R. flavirostris* is most nearly related to *R. batis* from Europe and South Africa and *R. stabuliforis* from the east coast of North America.

Raja doello-juradoi, Pozzi. (Plates II, III.)[1]

1935, *Physis*, XI, p. 491.

St. WS 98. 18. iv. 27. 49° 54′ 15″ S, 60° 35′ 30″ W. Commercial otter trawl, 173–171 m.: 1 female specimen, 380 mm. (width of disc 280 mm.).

St. WS 215. 31. v. 28. 47° 37′ S, 60° 50′ W. Net (7 mm. mesh) attached to back of trawl, 219–146 m.: 1 male specimen, 100 m. (width of disc 60 mm.).

[1] This species had been described by me as new to science, but after this report had gone to press my attention was drawn to Pozzi's preliminary description of what appears to be the same Ray. His specimens were taken off the coast of northern Argentina (39″ 12′ S; 56′ 00° 06″ W). He notes that *R. doello-juradoi* differs from *R. scabrata*, Garman, principally "por el menor número de espinas de la serie dorsal; el mayor número de los grandes acúleos supra-escapulares; menor longitud del apéndice caudal en función al tamaño del disco y coloración general".

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 1 female specimen, 300 mm. (width of disc 230 mm.).

St. WS 245. 18. vii. 28. 52° 36′ S, 63° 40′ W. Commercial otter trawl, 304–290 m.: 1 male specimen, 430 mm. (width of disc 330 mm.).

St. WS 783. 5. xii. 31. 50° 08′ S, 59° 50′ W. Commercial otter trawl, 155–159 m.: 1 male specimen, 200 mm. (width of disc 150 mm.).

St. WS 794. 17. xii. 31. 46° 12′ 37″ S, 60° 59′ 15″ W. Commercial otter trawl, 123–126 m.: 1 female specimen, 260 mm. (width of disc 200 mm.).

St. WS 795. 18. xii. 31. 46° 14′ S, 60° 24′ W. Commercial otter trawl, 157–161 m.: 1 male specimen, 195 mm. (width of disc 145 mm.), 1 female, 210 mm. (width of disc 150 mm.).

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 202–238 m.: 1 male specimen, 330 mm. (width of disc 260 mm.).

St. WS 820. 18. i. 32. 52° 53′ 15″ S, 61° 51′ 30″ W. Commercial otter trawl, 351–367 m.: 1 female specimen, 225 mm. (width of disc 170 mm.).

St. WS 851. 11. ii. 32. 51° 39′ 30″ S, 62° 01′ 15″ W. Commercial otter trawl, 221–197 m.: 2 male specimens, 195, 200 mm. (width of disc 140, 145 mm.).

Disc broader than long, its width about $\frac{3}{4}$ of the total length; anterior margins in females and immature males more or less undulated but scarcely emarginate; in mature males these margins are more or less distinctly notched; outer angles of disc obtusely pointed. Vent nearer to end of tail than to tip of snout. Snout scarcely projecting, its length a little more than $\frac{1}{7}$ (young) to about $\frac{1}{6}$ width of disc; interorbital width about equal to longitudinal diameter of eye; length of eye+spiracle $1\frac{1}{3}$ times to about twice in that of snout. Internasal width $\frac{2}{3}$ praeoral length of snout. Mouth nearly straight; teeth with pointed crowns, sometimes worn down so that the teeth appear flat; 28 to 34 rows in the upper jaw. Upper surface of disc with scattered spines, each sharply pointed and usually with a stellate base; hinder parts of pectoral fins smooth; in adult males and perhaps also in mature females these scattered spines are relatively smaller; a single strong praeocular, and 2 postocular spines, of which the more posterior is the larger; a large median spine on the back in the suprascapulary region and a single nuchal spine a little further forward; 3 smaller scapular spines, of which the innermost is the smallest; a series of 12 to 15 strong median spines extending from a point well in front of the hinder angle of the pectoral fin to the first dorsal fin; a row of much smaller spines on either side of the median series and a narrow area of asperities along each edge of the tail; all the enlarged spines on the disc and tail ribbed; mature males with 2 or 3 series of alar spines. Lower surface quite smooth. Dorsal fins close to end of tail, separated by a single (occasionally 2) spine. Brownish, with scattered and rather indistinct darker spots and blotches; in one female specimen (Plate III) there is a pair of yellowish-white blotches immediately in front of the eyes and one on either side in the angle between the pectoral and pelvic fins; lower surface uniformly yellow or white, the tail sometimes stained with greyish.

Hab. Argentina; Patagonian-Falklands region.

This species is very closely related to the European *R. radiata*, Donovan,[1] but in that species the tail is longer, the vent being nearer to the tip of the snout than to the

[1] *R. scabrata*, Garman, from the east coast of North America, will probably prove to be synonymous with the European form.

end of the tail, the teeth are somewhat smaller and more numerous (38 to 46 rows), and the spines on the disc less well developed. Further, in *R. radiata* the two dorsal fins are usually contiguous or continuous, only occasionally being separated by a spine, and there are generally only two scapular spines.

Raja macloviana, sp.n.

Raia magellanica (*non* Steindachner), Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 231, pl. i.

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 1 female specimen, 345 mm. (width of disc 220 mm.).

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 109–108 m.: 1 female specimen, 205 mm. (width of disc 135 mm.).

St. WS 217. 1. vi. 28. 46° 28′ S, 60° 18′ W. Commercial otter trawl, 146 m.: 2 female specimens, 390, 420 mm. (width of disc 250, 300 mm.).

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 1 male specimen, 350 mm. (width of disc 240 mm.), 1 female, 400 mm. (width of disc 270 mm.).

St. WS 225. 9. vi. 28. 50° 20′ S, 62° 30′ W. Commercial otter trawl, 162–161 m.: 3 male specimens, 270–425 mm. (width of disc 180–285 mm.),[1] 1 female, 280 mm. (width of disc 190 mm.).

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 191–238 m.: 2 male specimens, 230, 330 mm. (width of disc 150, 225 mm.), 1 female, 340 mm. (width of disc 230 mm.).

Disc a little broader than long, its width $\frac{3}{5}$ to $\frac{2}{3}$ of the total length; anterior margins scarcely undulated, not emarginate; outer angles rounded. Vent more or less equidistant from tip of snout and end of tail. Snout not projecting, its length about $\frac{1}{7}$ to more than $\frac{1}{6}$ width of disc; interorbital width equal to or less than longitudinal diameter of eye; length of eye + spiracle $1\frac{2}{5}$ to $1\frac{3}{4}$ in that of snout. Opening of spiracle extending forward below eye. Internasal width more than $\frac{1}{2}$ praeoral length of snout. Teeth of moderate size, with flattened crowns; 26 to 36 rows in upper jaw, which has a shallow median notch. Upper surface of disc more or less covered with small scattered spines, which are more numerous and closer together at its anterior margins and along middle of back; one praeocular and one postocular spine; a pair of scapular spines; a median series of 25 to 29 spines extending from the nuchal region to the first dorsal fin; irregular rows of much smaller spines at edges of tail. Mature males with 2 or 3 irregular series of alar spines. Lower surface quite smooth. Dorsal fins close to end of tail, usually separated by a spine. Brownish, usually with some indistinct scattered round white spots, margined with dark brown or blackish; a pair of larger and more distinct white spots, ringed with dark brown, on posterior parts of pectoral bases; hinder margins of pectorals and edges of pelvics with a white border in the young; lower surface uniformly yellow or white.

Hab. Patagonian-Falklands region.

This species appears to be most nearly related to *R. murrayi*, Günther, from Kerguelen, but has a blunter snout, a somewhat shorter and stouter tail, more numerous and smaller teeth, and somewhat different coloration. I have examined the specimen from

[1] The largest specimen has been selected as the holotype.

the Burdwood Bank collected by the 'Scotia', which was identified by Regan as *R. magellanica*. This is now preserved in the Bruce Collection at the Royal Scottish Museum, Edinburgh.

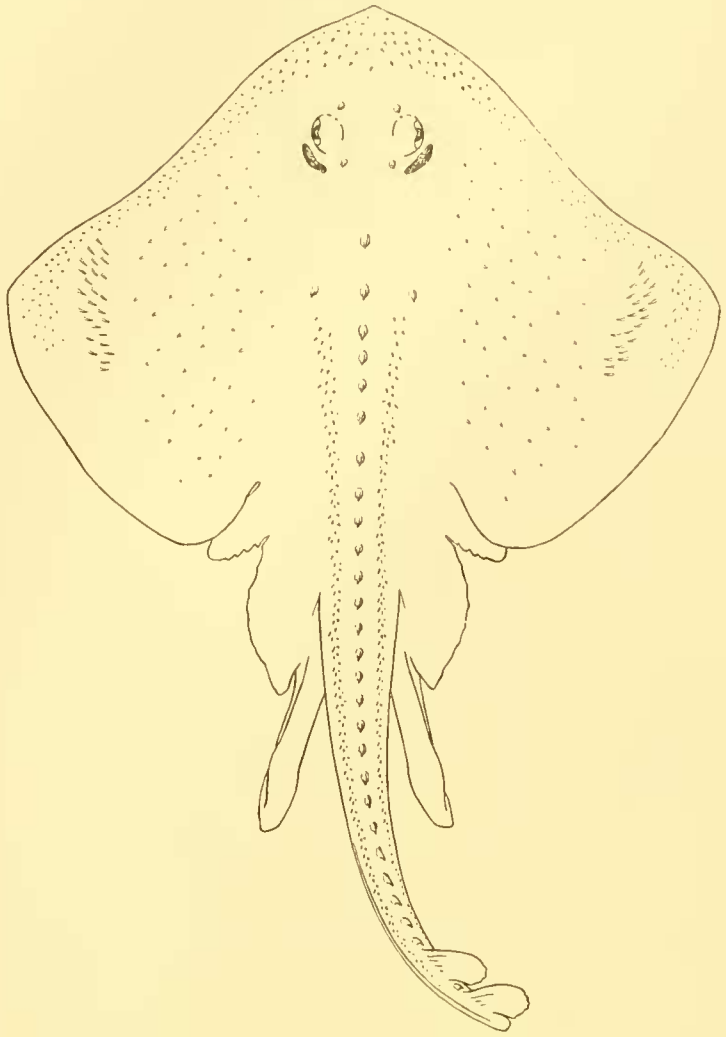

Fig. 5. *Raja macloviana*. Holotype. $\times \frac{1}{3}$.

Raja magellanica, Steindachner (Plate IV).

? *Raia magellanica*, Philippi, 1902, *Revist. Chil.*, VI (1), p. 59.

Raia magellanica, Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 212; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 360; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 421.

St. WS 72. 5. iii. 27. 51° 07′ S, 57° 34′ W. Commercial otter trawl, 79 m.: 1 male specimen, 190 mm. (width of disc 135 mm.).

St. WS 77. 12. iii. 27. 51° 01′ S, 66° 31′ 30″ W. Commercial otter trawl, 110–113 m.: 1 male specimen, 450 mm. (width of disc 300 mm.), 1 female, 320 mm. (width of disc 225 mm.).

St. WS 78. 13. iii. 27. 51° 01′ S, 68° 04′ 30″ W. Commercial otter trawl, 95–91 m.: 1 female specimen, 375 mm. (width of disc 250 mm.).

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 5 female specimens, 140–240 mm. (width of disc 95–160 mm.).

St. WS 91. 8. iv. 27. 52° 53′ 45″ S, 64 37′ 30″ W. Commercial otter trawl, 191–205 m.: 1 male specimen, 165 mm. (width of disc 105 mm.).

St. WS 92. 8. iv. 27. 51° 58′ 30″ S, 65 01′ W. Commercial otter trawl, 145–143 m.: 1 male specimen, 185 mm. (width of disc 125 mm.), 1 female, 410 mm. (width of disc 275 mm.).

St. WS 94. 16. iv. 27. 50° 00′ 15″ S, 64° 57′ 45″ W. Commercial otter trawl, 110–126 m.: 3 male specimens, 445–450 mm. (width of disc 300–310 mm.).

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 109–108 m.: 1 male specimen, 300 mm. (width of disc 205 mm.), 3 females, 155–490 mm. (width of disc 105–340 mm.).

St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 96 m.: 1 male specimen, 140 mm. (width of disc 90 mm.).

St. WS 108. 25. iv. 27. 48° 30′ 45″ S, 63° 33′ 45″ W. Commercial otter trawl, 118–120 m.: 1 male specimen, 280 mm. (width of disc 190 mm.), 1 female, 255 mm. (width of disc 170 mm.).

St. WS 109. 26. iv. 27. 50° 18′ 48″ S, 58° 28′ 30″ W. Commercial otter trawl, 145 m.: 1 male specimen, 445 mm. (width of disc 300 mm.).

St. WS 223. 8. vi. 28. 49° 13′ S, 64° 52′ W. Commercial otter trawl, 114 m.: 1 female specimen, 260 mm. (width of disc 175 mm.).

St. WS 245. 18. vii. 28. 52° 36′ S, 63° 40′ W. Commercial otter trawl, 304–290 m.: 1 female specimen, 360 mm. (width of disc 245 mm.).

St. WS 246. 19. vii. 28. 52° 25′ S, 61° 00′ W. Commercial otter trawl, 267–208 m.: 1 male specimen, 365 mm. (width of disc 260 mm.).

Disc a little broader than long, its width $\frac{2}{3}$ to nearly $\frac{3}{4}$ of the total length; anterior margins more or less undulated, not emarginate; outer angles rounded. Vent a little nearer to end of tail than to tip of snout. Snout scarcely projecting, but with a short, obtuse, triangular projection in the young, its length about $\frac{1}{5}$ width of disc; interorbital width a little less than length of eye + spiracle, which is $1\frac{4}{5}$ to $2\frac{1}{4}$ in that of snout. Internasal width about $\frac{1}{2}$ praeoral length of snout. Mouth nearly straight; teeth rather large, with pointed crowns, which may be worn down so that the teeth appear flat; 26 to 30 rows in the upper jaw. Upper surface of disc mainly smooth, but with a broad area on the anterior margin of each pectoral fin covered with small scattered spines; adults often with a small patch of similar spines on the posterior part of the pectoral, or with the anterior group extending posteriorly to the hinder part of the fin; usually a number of spines on the snout and round the eyes; 1 fairly strong praeocular and 1 similar postocular spine; generally 2 scapular spines, but the outer one may be absent; a median series of 26 to 30 stronger spines, extending from the nuchal region to the first dorsal fin; a strip of small asperities on either side of the median series of spines; mature males with 1 or 2 series of alar spines. Lower surface quite smooth. Dorsal fins close to end of tail, generally separated by a spine. Brownish or greyish, with a number of dark, undulating lines, sometimes broken up into spots,[1] many of them enclosing circular or oval areas of paler ground colour; always a large and more distinct oval pale area, margined with dark brown or black and partially divided into two by a dark line, on posterior part of each pectoral base; lower surface uniformly yellow or white.

Hab. Patagonian-Falklands region; Straits of Magellan.

The specimens listed above agree closely with Steindachner's original description except in the matter of the scapular spines, which are said to be three in number on

[1] This appears to be the case in the specimens taken in deeper water.

each side. The coloration is so characteristic, however, that there can be little doubt as to the identification of these specimens with Steindachner's species rather than those described above as *R. macloviana*.

Raja multispinis, sp.n.

St. WS 851. 11. ii. 32. 51° 39′ 30″ S, 62° 01′ 15″ W. Commercial otter trawl, 221–197 m.: 1 male specimen, 320 mm. (width of disc 220 mm.). Holotype.

Disc broader than long, its width about $\frac{3}{4}$ of the total length; anterior margins scarcely undulated, not emarginate; outer angles very obtusely pointed. Vent nearer to tip of snout than to end of tail. Snout with a very short, obtuse, triangular projection, its length rather more than $\frac{1}{6}$ width of disc; interorbital width rather less than length of eye + spiracle, which is $2\frac{2}{5}$ in that of snout. Internasal width about $\frac{1}{2}$ praeoral length of snout. Mouth nearly straight; teeth rather large, close-set, with flattened crowns; about 24 rows in upper jaw. Upper surface of disc mainly smooth; areas of well-developed, rather widely separated spinules on anterior parts of pectorals, on the snout, round the eyes, and along the middle of the back; no enlarged ocular spines; 2 scapular spines; a median series of 42 spines of moderate size, extending from the nuchal region to the first dorsal fin; 3 or 4 rows of very small spines on each side of the tail. Lower surface quite smooth. Dorsal fins separated from end of tail by a space which is greater than length of base of first dorsal; a spine between the two fins. Greyish brown, with faint traces of paler and darker spots.

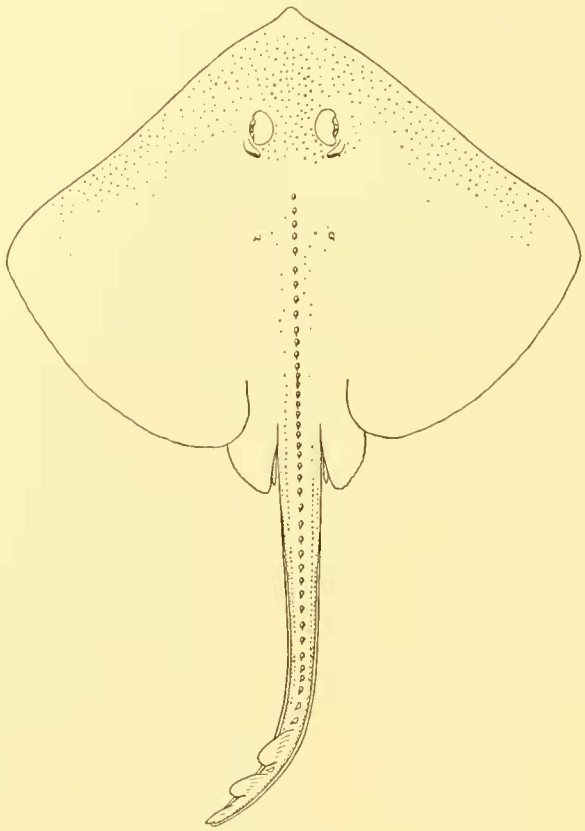

Fig. 6. *Raja multispinis*. Holotype. $\times\frac{1}{3}$.

Hab. North-west of the Falkland Islands.

Raja scaphiops, sp.n.

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–347 m.: 1 female specimen, 410 mm. (width of disc 290 mm.). Holotype.

St. WS 250. 20. vii. 28. 51° 45′ S, 57° 00′ W. Commercial otter trawl, 251–313 m.: 1 female specimen, 350 mm. (width of disc 240 mm.).

St. WS 824. 19. i. 32. 52° 29′ 15″ S, 58° 27′ 15″ W. Commercial otter trawl, 146–147 m.: 1 male specimen, 260 mm. (width of disc 180 mm.).

Disc broader than long, its width about $\frac{2}{3}$ of the total length; anterior margins nearly straight or a little undulated; outer angles obtusely pointed. Vent rather nearer to end

of tail than to tip of snout. Snout moderately pointed (the margins meeting at an angle of about 90°), its length $\frac{1}{5}$ (young) to more than $\frac{1}{4}$ width of disc; interorbital width equal to or rather less than diameter of eye; length of eye + spiracle $2\frac{2}{3}$ to $3\frac{1}{3}$ in that of snout.

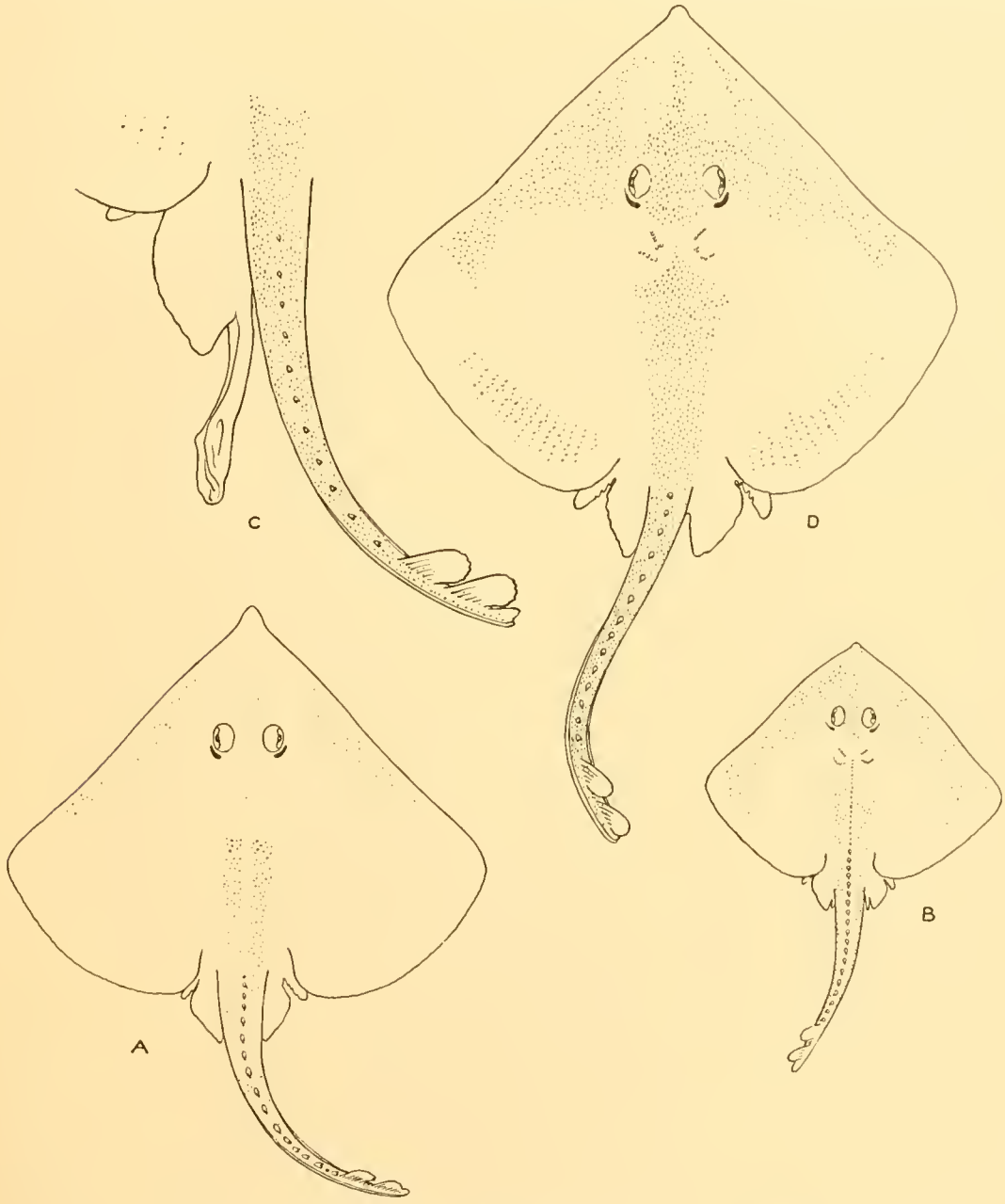

Fig. 7. A, *Raja scaphiops*, holotype; B, *R. scaphiops*, young male; C, *R. eatonii*, tail of mature male; D, *R. eatonii*, female. × $\frac{1}{4}$.

Internasal width $2\frac{1}{2}$ to $2\frac{3}{4}$ in praeoral length of snout. Mouth nearly straight; teeth of moderate size, with pointed crowns, sometimes worn so that the teeth appear flat; 30 to 34 rows in the upper jaw. Upper surface of disc mainly smooth, but with areas of minute spinules on anterior parts of pectorals, on snout, round the eyes and on the

back; no ocular or scapular spines, and no enlarged median spines on the disc; a median series of 17 to 19 sharply pointed, backwardly curved spines on the tail, extending from the pelvic region to the first dorsal fin; in the young male these extend forward on to the disc, but are much smaller in this region and decrease in size anteriorly; edges of tail with minute asperities. Lower surface quite smooth. Dorsal fins close to end of tail, separated by a spine. Brownish, with traces of paler and darker spots or rings; the two females show traces of a pale pectoral ocellus, margined with darker; lower surface uniformly yellow or white, the tail sometimes stained with darker.

Hab. North of the Falkland Islands.

This species is close to *R. eatonii*, Günther, from Kerguelen, differing chiefly in the shape of the disc, the narrower interorbital, larger and more numerous median spines on the tail, etc. It is not unlike *R. aguja*, Kendall and Radcliffe, from the coast of Peru, but that species has a shorter snout and smaller and more numerous spines on the tail.

Raja albomaculata, sp.n. (Plate V).

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 202–238 m.: 1 male specimen, 400 mm. (width of disc 280 mm.).

St. WS 824. 19. i. 32. 52° 29′ 15″ S, 58° 27′ 15″ W. Commercial otter trawl, 146–137 m.: 1 male specimen, 360 mm. (width of disc 260 mm.).

St. WS 839. 5. ii. 32. 53° 30′ 15″ S, 63° 29′ W. Commercial otter trawl, 403–434 m.: 1 male specimen, 630 mm. (width of disc 420 mm.). Holotype.

St. WS 868. 30. iii. 32. 51° 44′ S, 64° 13′ W. Commercial otter trawl, 166–162 m.: 1 female specimen, 490 mm. (width of disc 330 mm.).

St. WS 875. 3. iv. 32. 52° 36′ S, 63° 47′ 45″ W. Commercial otter trawl, 252–234 m.: 1 male specimen, 370 mm. (width of disc 265 mm.).

The following young specimen may belong here:

St. WS 245. 18. vii. 28. 52° 36′ S, 63° 40′ W. Commercial otter trawl, 304–290 m.: 1 female specimen, 170 mm. (width of disc 105 mm.).

Disc broader than long, its width $\frac{2}{3}$ to more than $\frac{3}{4}$ of the total length; anterior margins a little undulated, not emarginate; outer angles rounded or very obtusely pointed. Vent about equidistant from tip of snout and end of tail. Snout sometimes with a very short obtuse projection, its length about $\frac{1}{6}$ width of disc; interorbital width equal to or a little less than longitudinal diameter of eye; length of eye + spiracle $1\frac{3}{4}$ to twice in that of snout. Internasal width rather more $\frac{1}{2}$ praeoral length of snout. Teeth of moderate size, close-set, with pointed crowns, often worn so that the teeth appear quite flat; 28 to 34 rows in the upper jaw, which has a shallow median emargination. Upper surface of disc mainly smooth, but with patches of minute spinules, chiefly on anterior parts of pectorals, on the snout, round the eyes, and on each side of the median series of spines; in a mature male the disc is nearly smooth, with a few spinules on its anterior edges and in the ocular region; no enlarged ocular or scapular spines; a median series of 17 to 23 strong, curved, compressed spines, extending from the nuchal region to the first dorsal fin, those on the tail stronger than those on disc; 2 or 3 spines on the nuchal region sometimes separated by a gap from the remainder; in a female of 490 mm.

the anterior spines of the series on the disc are wanting; mature males with 3 or 4 series of alar spines. Lower surface quite smooth. Dorsal fins close to end of tail, with or without a spine between them. Brownish or greyish, with a number of small, scattered, rounded white spots, sometimes margined with dark brown; pelvics narrowly edged with white; lower surface uniformly white.

Hab. Patagonian-Falklands region.

This species appears to be most nearly related to *R. brachyurops*, but may be at once recognized by the stronger median spines and different coloration, as well as by the form of the mixopterygia.

Raja brachyurops, Fowler.

Raia brachyura (*non* Lafont), Günther, 1880, *Shore Fish. 'Challenger'*, p. 20, pl. vi; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 14; Delfin, 1901, *Cat. Peces Chile*, p. 24; Lahille, 1921, *Physis*, V, p. 63.

? *Raia brachyura*, Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 14, pl. ii, figs. 1, 1*b*.

Raia brachyurops, Fowler, 1910, *Proc. Acad. N.S. Philad.*, LXII, p. 468; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 360.

? *Raia aguja*, Marini, 1928, *Physis*, IX, p. 274, figs. 1, 2.

? *Raia gallardoi*, Marini, 1933, *Physis*, XI, p. 331.

St. 48. 3. v. 26. 8·3 miles N 53° E of William Point Beacon, Port William, Falkland Islands. Large otter trawl, 105–115 m.: 1 egg-capsule, 1 embryo.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Island. Large dredge, 115 m.: 1 male specimen, 130 mm. (width of disc 78 mm.), 1 female, 145 mm. (width of disc 75 mm.). Large otter trawl, 105–115 m.: 3 male specimens, 140–150 mm. (width of disc 85–110 mm.), 3 females, 135–170 mm. (width of disc 85–110 mm.), and 4 very small embryos.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 2 male specimens, 240, 400 mm. (width of disc 175, 300 mm.), 2 females, 230, 315 mm. (width of disc 160, 220 mm.).

St. WS 77. 12. iii. 27. 51° 01′ S, 66° 31′ 30″ W. Commercial otter trawl, 110–113 m.: 1 female specimen, 440 mm. (width of disc 320 mm.).

St. WS 78. 13. iii. 27. 51° 01′ S, 68° 02′ W. Commercial otter trawl, 95–91 m.: 1 male specimen, 420 mm. (width of disc 310 mm.), 1 female, 460 mm. (width of disc 330 mm.).

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 8 male specimens, 305–550 mm. (width of disc 210–410 mm.), 13 females, 235–530 mm. (width of disc 175–405 mm.).

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 1 female specimen, 320 mm. (width of disc 230 mm.).

St. WS 87. 3. iv. 27. 54° 07′ 30″ S, 58° 16′ W. Commercial otter trawl, 96–127 m.: 2 male specimens, 215, 240 mm. (width of disc 150, 180 mm.).

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 1 male specimen, 240 mm. (width of disc 160 mm.), 1 female, 180 mm. (width of disc 120 mm.).

St. WS 92. 8. iv. 27. 51° 58′ 30″ S, 65° 01′ W. Commercial otter trawl, 145–143 m.: 1 male specimen, 150 mm. (width of disc 105 mm.).

St. WS 94. 16. iv. 27. 50° 00′ 15″ S, 64° 57′ 45″ W. Commercial otter trawl, 110–126 m.: 2 male specimens, 150, 350 mm. (width of disc 98, 250 mm.).

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 109–108 m.: 1 female specimen, 140 mm. (width of disc 90 mm.).

St. WS 98. 18. iv. 27. 49° 54′ 15″ S, 60° 35′ 30″ W. Commercial otter trawl, 173–171 m.: 3 male specimens, 250–410 mm. (width of disc 180–310 mm.), 1 female, 440 mm. (width of disc 320 mm.).

St. WS 109. 26. iv. 27. 50° 18′ 48″ S, 58° 28′ 30″ W. Commercial otter trawl, 145 m.: 1 male specimen, 150 mm. (width of disc 100 mm.), 1 female, 140 mm. (width of disc 95 mm.).

St. WS 214. 31. v. 28. 48° 25′ S, 60° 40′ W. Commercial otter trawl, 208–219 m.: 2 female specimens, 300, 490 mm. (width of disc 210, 380 mm.).

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 1 female specimen, 580 mm. (width of disc 430 mm.).

St. WS 225. 9. vi. 28. 50° 20′ S, 62° 30′ W. Commercial otter trawl, 162–161 m.: 2 male specimens, 230, 250 mm. (width of disc 165, 180 mm.), 2 females, 210, 350 mm. (width of disc 140, 265 mm.).

St. WS 233. 5. vii. 28. 49° 25′ S, 59° 45′ W. Commercial otter trawl, 185–175 m.: 1 egg-capsule.

St. WS 234. 5. vii. 28. 48° 52′ S, 60° 25′ W. Commercial otter trawl, 195–207 m.: 1 male specimen, 310 mm. (width of disc 230 mm.), 1 female, 230 mm. (width of disc 170 mm.).

St. WS 239. 15. vii. 28. 51° 10′ S, 62° 10′ W. Commercial otter trawl, 196–193 m.: 3 male specimens, 215–490 mm. (width of disc 145–370 mm.), 1 female, 190 mm. (width of disc 130 mm.).

St. WS 250. 20. vii. 28. 51° 45′ S, 57° 00′ W. Commercial otter trawl, 251–313 m.: 1 male specimen, 400 mm. (width of disc 310 mm.), 1 female, 210 mm. (width of disc 145 mm.).

St. WS 765. 17. x. 31. 45° 07′ S, 60° 28′ 15″ W. Commercial otter trawl, 113–118 m.: 1 male specimen, 480 mm. (width of disc 350 mm.), 2 females, 130, 160 mm. (width of disc 85, 105 mm.), 1 egg-capsule.

St. WS 772. 30. x. 31. 45° 13′ 22″ S, 60° 00′ 15″ W. Commercial otter trawl, 309–162 m.: 1 male specimen, 240 mm. (width of disc 170 mm.), 1 female, 270 mm. (width of disc 200 mm.).

St. WS 783. 5. xii. 31. 50° 08′ S, 59° 50′ W. Commercial otter trawl, 155–159 m.: 2 male specimens, 280, 400 mm. (width of disc 220, 300 mm.), 1 female, 350 mm. (width of disc 240 mm.).

St. WS 784. 5. xii. 31. 49° 47′ 45″ S, 61° 05′ W. Commercial otter trawl, 170–164 m.: 2 male specimens, 180, 195 mm. (width of disc 125, 140 mm.).

St. WS 785. 6. xii. 31. 49° 26′ 30″ S, 62° 34′ W. Commercial otter trawl, 150–147 m.: 1 male specimen, 225 mm. (width of disc 165 mm.).

St. WS 791. 14. xii. 31. 45° 38′ 45″ S, 62° 55′ W. Commercial otter trawl, 96–101 m.: 2 male specimens, 360, 450 mm. (width of disc 290, 330 mm.).

St. WS 800. 21–22. xii. 31. 48° 19′ S, 61° 58′ W. Commercial otter trawl, 137–139 m.: 1 male specimen, 240 mm. (width of disc 170 mm.), 1 female, 225 mm. (width of disc 165 mm.).

St. WS 867. 30. iii. 32. 51° 10′ S, 64° 15′ 30″ W. Small beam trawl, 150–149 m.: 1 female specimen, 670 mm. (width of disc 500 mm.).

St. WS 874. 3. iv. 32. 52° 35′ 30″ S, 65° 14′ W. Commercial otter trawl, 135–132 m.: 2 male specimens, 350, 510 mm. (width of disc 265, 365 mm.).

The following specimens may also belong here:

St. 652. 14. iii. 31. Burdwood Bank (54° 04′ S, 61° 40′ W). Large dredge, 164 m.: 1 egg-capsule, with embryo.

St. WS 799. 21. xii. 31. 48° 04′ 15″ S, 62° 48′ 07″ W. Commercial otter trawl, 137–139 m.: 1 male embryo.

St. WS 850. 11. ii. 32. 51° 18′ 45″ S, 63° 30′ 15″ W. Commercial otter trawl, 157–166 m.: 2 male embryos.

Disc a little broader than long, its width $\frac{2}{3}$ to $\frac{3}{4}$ of the total length; anterior margins more or less undulated, not markedly emarginate; outer angles rounded or obtusely pointed. Vent (in adults) always nearer to end of tail than to tip of snout; in young examples the tail is proportionately longer, the vent being equidistant from snout and

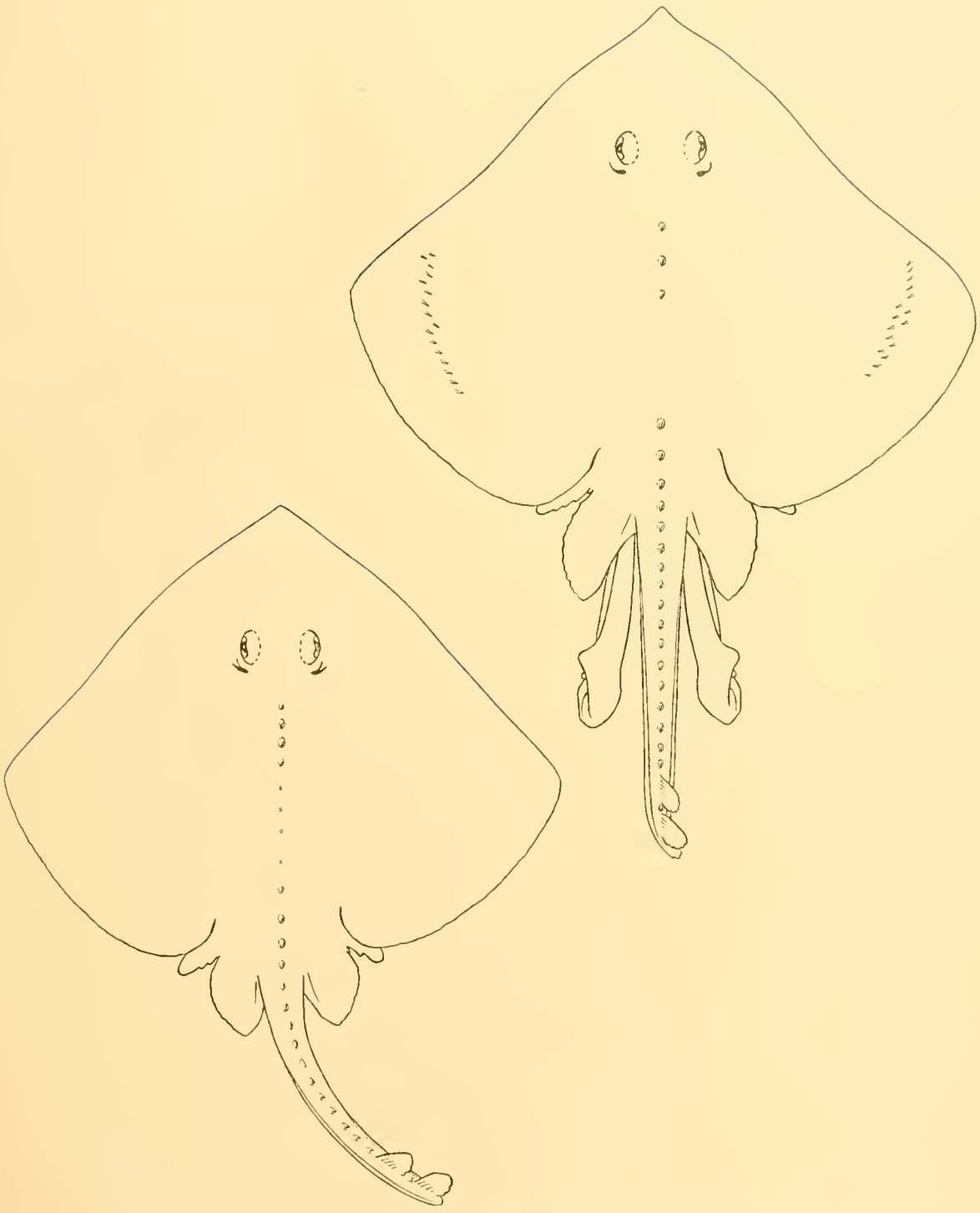

Fig. 8. *Raja brachyurops*. Male ($\times \frac{1}{3}$), female ($\times \frac{1}{5}$).

tail or nearer to the former. Snout with a small rounded projection, its length about $\frac{1}{5}$ width of disc; interorbital width equal to or a little greater than longitudinal diameter of eye; length of eye + spiracle $1\frac{3}{4}$ (young) to about 3 in that of snout. Internasal width $1\frac{4}{5}$ to $2\frac{1}{5}$ in praeoral length of snout. Mouth nearly straight; teeth with pointed crowns, often worn so that the teeth appear flat; 22 to 34 rows in the upper jaw. Upper surface of disc with numerous very small spinules, concentrated especially on the anterior parts of the pectoral fins, on the snout, round the eyes, and on the back; in females, and, to a lesser extent in males, there are often numerous spinules on the hinder parts of the pectorals; no ocular or scapular spines; a median series of 12 to 18 strong, sharply pointed, backwardly curved spines, usually extending from opposite the hinder parts of the pectorals to the first dorsal fin; a row of 1 to 5 similar spines on the nuchal and suprascapulary regions, usually separated by a wide gap from the main series, but sometimes extending posteriorly to unite with it; very occasionally these anterior median spines are absent; an area of small spinules, similar to those covering the disc, on each side of the upper surface of the tail; mature males with 2, 3, or more series of alar spines. Lower surface quite smooth. Dorsal fins close to end of tail, generally separated by a spine. Brownish; often with indistinct paler spots of various sizes, some of them margined with dark brown, scattered over the disc; the most conspicuous marking is an ocellus on the hinder part of the base of each pectoral, which may be yellow or white, margined with brown or black, and is sometimes very clear, sometimes faint, and sometimes represented by a faint dark ring; this ocellus may be absent altogether; sometimes a pair of white or yellow spots on the upper surface of the anterior half of the tail, nearly united in the middle line; lower surface of the disc uniformly yellow or white, that of the tail sometimes with irregular dusky spots.

Hab. Argentina(?); Patagonian-Falklands region; Straits of Magellan, and west of them.

In addition to the above, I have included the two types collected by the 'Challenger' at Stns. 313 and 314 in the description. One of these is a male, 693 mm. in total length (width of disc 470 mm.), the other a female, 826 mm. long (width of disc 635 mm.).

Raja griseocauda, sp.n.

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 1 male specimen, 255 mm. (width of disc 180 mm.).

St. WS 236. 6. vii. 28. 46° 55′ S, 60° 40′ W. Commercial otter trawl, 272–300 m.: 2 male specimens, 320, 322 mm. (width of disc 220, 230 mm.).

St. WS 250. 20. vii. 28. 51° 45′ S, 57° 00′ W. Commercial otter trawl, 313–251 m.: 1 male specimen, 290 mm. (width of disc 200 mm.).

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 202–238 m.: 1 female specimen, 460 mm. (width of disc 330 mm.). Holotype.

St. WS 824. 19. i. 32. 52° 29′ 15″ S, 58° 27′ 15″ W. Commercial otter trawl, 146–137 m.: 1 male specimen, 250 mm. (width of disc 175 mm.).

Closely related to *R. brachyurops*, but with the vent nearly always nearer to tip of snout than to end of tail. Length of snout $\frac{1}{6}$ or rather more than $\frac{1}{6}$ width of disc; length of eye + spiracle $2\frac{1}{3}$ to $2\frac{1}{2}$ in that of snout. Teeth rather smaller; 30 to 36 rows

in the upper jaw. Upper surface of disc with numerous small spinules, arranged much as in *R. brachyurops*, but a little larger, less numerous, and placed rather wider apart; no enlarged median spines on disc; median spines on tail somewhat stronger, commencing above origin of pelvic fins. Dorsal fins usually without a spine between them.

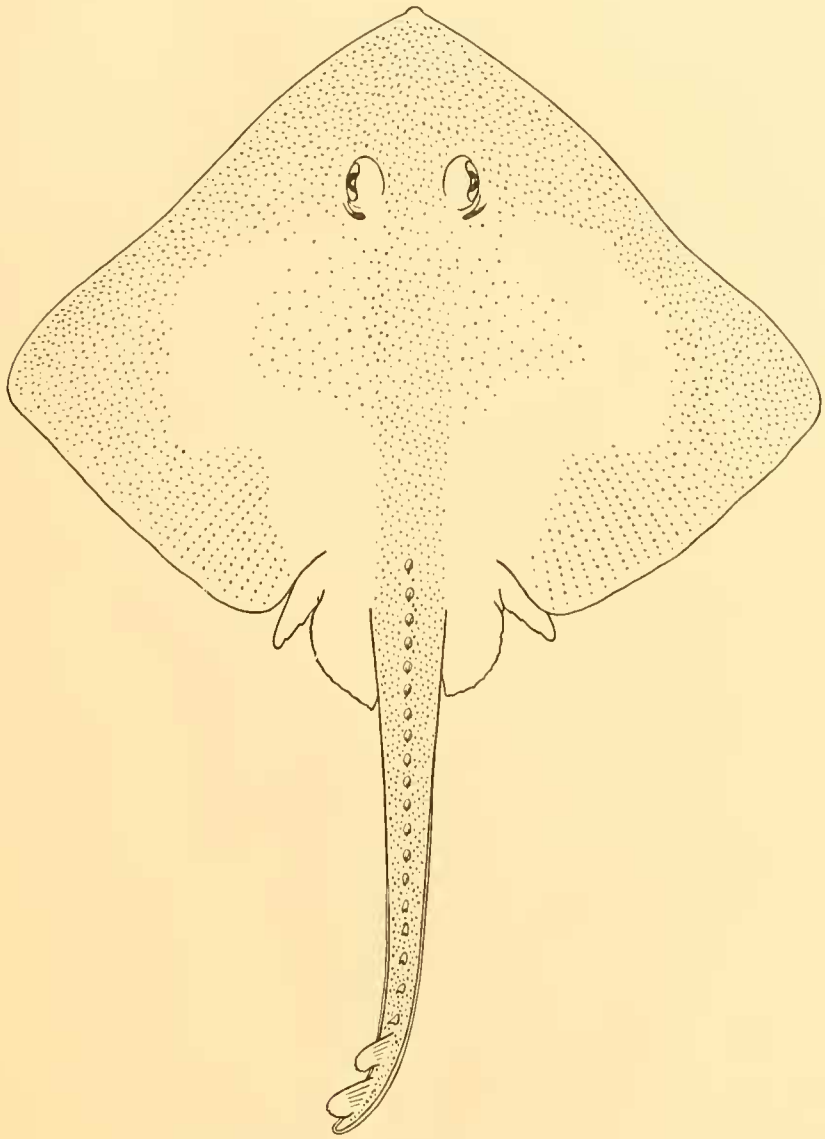

Fig. 9. *Raja griseocauda*. Holotype. $\times \frac{1}{3}$.

Brownish, with or without traces of darker spots and rings, but apparently without the pectoral ocellus or the pale spots on the tail; lower surface yellow or white; posterior margins of pectorals and pelvics dusky; lateral parts of lower surface of tail, or even the whole of its surface, stained with greyish brown.

Hab. Patagonian-Falklands region.

Revision of the Genus *Psammobatis*

Genus Psammobatis, Günther[1]

1870, *Cat. Fish.*, VIII, p. 470. Type *P. rudis*, Günther.
Malacorhina, Garman, 1877, *Proc. Boston Soc. N.H.*, XIX, p. 203. Type *Raja mira*, Garman.

This genus is closely related to *Raja*, but lacks the rostral prolongation of the cranium. In the species in which mature males have been described, the anterior margins of the disc are more or less distinctly notched, and the mixopterygia are long, slender, and with their distal ends pointed and not expanded. Another feature is the frequent presence in young and half-grown individuals of both sexes of a very small barbel-like process at the tip of the snout, which may be borne on a small fleshy prominence: this process sometimes persists in the adult.

Key to the species

I. Interorbital width never very much greater than longitudinal diameter of eye; length of eye + spiracle $1\frac{3}{4}$ to about 2 in that of snout, which is $4\frac{4}{5}$ to about 6 in width of disc.
  A. Interorbital width less than longitudinal diameter of eye; a triangular patch of enlarged spines on the scapulary region ... ... *extenta.*
  B. Interorbital width equal to or rather greater than longitudinal diameter of eye; sometimes 1 to 4 median nuchal spines, but no scapulary spines ... ... *scobina.*

II. Interorbital width 2 to 4 times longitudinal diameter of eye; length of eye + spiracle $2\frac{1}{4}$ to nearly 4 in that of snout, which is $4\frac{1}{2}$ to about 7 in width of disc.
  A. Length of snout $4\frac{1}{2}$ to $6\frac{1}{3}$ in width of disc, which is $\frac{2}{3}$ to $\frac{3}{4}$ of the total length of fish.
    1. Length of snout $4\frac{1}{2}$ to $4\frac{3}{4}$ in width of disc, $3\frac{2}{3}$ to nearly 4 times that of eye + spiracle; vent nearer to tip of snout than to end of tail ... ... *microps.*
    2. Length of snout $5\frac{2}{3}$ to $6\frac{1}{3}$ in width of disc, $2\frac{1}{4}$ to $2\frac{1}{2}$ times that of eye + spiracle; vent equidistant from tip of snout and end of tail or nearer to the latter ... ... *lima.*
  B. Length of snout about 7 in width of disc, which is about $\frac{5}{6}$ of the total length of fish ... ... *brevicaudatus.*

Raja waitii, McCulloch, from South Australia, has been associated with this genus by some authors, but has recently been made the type of a new genus, *Irolita*, by Whitley (1931, *Rec. Austral. Mus.*, XVIII, p. 97).

Psammobatis extenta (Garman).

Raja erinacea (*non* Mitchill), Ribeiro, 1907, *Arch. Mus. Nac. Rio Janeiro*, XIV, p. 176, pls. xii, xiii.
Raia extenta, Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 356; Marini, 1928, *Physis*, IX, p. 278, figs.
Malacorhina cirrifer, Regan, 1914, *Ann. Mag. Nat. Hist.* (8) XIII, p. 16.
Psammobatis cirrifer, Regan, 1914, *Brit. Antarct.* ('*Terra Nova*') *Exped.* 1910, Zool. I (1), p. 21, pl. xiii.
Raja cirrifera, Ribeiro, 1923, *Faun. Brasil., Peixes*, II (1), fasc. 1, p. 33.
Psammobatis bergi, Marini, 1932, *Physis*, XI, p. 140, 2 figs.

St. WS 788. 13. xii. 31. 45° 05′ S, 65° 00′ W. Commercial otter trawl, 82–88 m.: 1 male specimen, 260 + mm. (width of disc 180 mm.).

[1] Not to be confused with *Psammobates*, Fitzinger (1835), a genus of reptiles.

Disc broader than long, its width $\frac{1}{2}$ or rather more than $\frac{1}{2}$ of the total length; anterior margins more or less evenly curved in females, notched in males; outer angles rounded. Vent much nearer to tip of snout than to end of tail. Snout with a very small barbel, borne by a small triangular prominence, its length (without barbel) $4\frac{4}{5}$ to $5\frac{1}{2}$ in width of disc; interorbital width less than longitudinal diameter of eye; length of eye + spiracle $1\frac{3}{4}$ to twice in that of snout. Internasal width $2\frac{3}{4}$ to more than 3 times in praeoral length of snout. Mouth with a median emargination in the upper jaw; teeth close-set, with pointed crowns (often worn, so that the teeth appear quite flat); 40 to 44 rows in the upper jaw. Upper surface of disc mainly smooth, but with areas of small, well-separated spines along anterior margins of pectoral fins, and sometimes with a small patch of spines on the hinder part of each pectoral; in the young female the spines are somewhat stronger, mostly with radiating bases, and scattered over the greater part of the disc, being more numerous, however, near the anterior and posterior margins of the pectorals; a series of spines at inner margin of each orbit; a roughly triangular patch on the scapulary region; tail with 3 irregular series of spines posteriorly, and about 5 anteriorly, continued forward on the disc as 2 to 4 irregular rows, which may extend anteriorly as far as the scapulary patch; mature males with 3 or 4 series of alar spines. Lower surface quite smooth. Dorsal fins close to end of tail, separated from one another or contiguous at their bases, separated from or continuous with the caudal fin. Brownish or greyish, spotted or mottled with dark brown and with some small indistinct ocelli scattered over the disc; lower surface uniformly white.

Hab. Atlantic coast of South America, from Rio de Janeiro to latitude 45° S.

In addition to the specimen mentioned above, the description is based upon the type of *Psammobatis cirrifer*, a female 220 mm. in total length (width of disc 125 mm.) from Cape Frio, Brazil (22° 56′ S, 41° 34′ W), and 2 specimens, a male 362 mm. (width of disc 210 mm.) and a female 358 mm. (width of disc 200 mm.), from off the coast of Uruguay (34° S, 50° W), presented to the British Museum by Dr T. Marini. The specimen collected by the 'William Scoresby' differs in certain respects (more definitely notched upper jaw, slightly larger eye, different spination and coloration, etc.) from typical examples of *P. extenta*, and it is possible that the southern form represents a distinct species. In view of the extreme variability of *Psammobatis scobina*, however, I am not prepared to give a new name to a single example with mutilated tail.

Psammobatis scobina (Philippi).

Raja scobina, Philippi, 1857, *Arch. Naturg.*, XXIII (1), p. 270; Philippi, 1892, *An. Mus. Nac. Chile*, I. Zool., p. 2, pl. i, fig. 1; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 7.

Uraptera scobina, Duméril, 1865, *Hist. Nat. Poiss.*, I, p. 574.

Psammobatis rudis, Günther, 1870, *Cat. Fish.*, VIII, p. 470; Günther, 1880, *Shore Fish. 'Challenger'*, p. 20, pl. v; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 15; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 14; Delfin, 1901, *Cat. Peces Chile*, p. 24; Lönnberg, 1907, *t.c.*, p. 7; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, pp. 404, 421; Lahille, 1928, *Anal. Mus. Nac. B. Aires*, XXXIV, p. 329, fig. 19.

Raia (*Malacorhina*) *mira*, Garman, 1877, *Proc. Boston Soc. N.H.*, XIX, p. 207.

Psammobatis rutrum, Jordan, 1890, *Proc. U.S. Nat. Mus.*, XIII, p. 334.

Raja philippii, Delfin, 1902, *Revist. Chil.*, VI (4), p. 262, pl. x.

Psammobatis scobina, Evermann and Kendall, 1906, *Proc. U.S. Nat. Mus.*, XXXI, p. 71; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 370.

Malacorhina mira, Garman, 1913, *t.c.*, p. 372, pl. XXVII, figs. 3–5, pl. lxix, figs. 1, 2; Marini, 1928, *Physis*, IX, p. 134, figs.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 1 male specimen, 360 mm. (width of disc 240 mm.), 1 female, 370 mm. (width of disc 225 mm.).

St. WS 77. 12. iii. 27. 51° 01′ S, 66° 31′ 30″ W. Commercial otter trawl, 110–113 m.: 1 male specimen, 320 mm. (width of disc 200 mm.), 2 females 350, 385 mm. (width of disc 220, 230 mm.).

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 3 male specimens, 350–420 mm. (width of disc 230–255 mm.), 3 females, 340–370 mm. (width of disc 200–230 mm.).

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 2 male specimens, 305, 360 mm. (width of disc 195, 235 mm.), 1 female, 320 mm. (width of disc 200 mm.).

St. WS 91. 8. iv. 27. 52° 53′ 45″ S, 64° 37′ 30″ W. Commercial otter trawl, 191–205 m.: 1 female specimen, 300 mm. (width of disc 190 mm.).

St. WS 92. 8. iv. 27. 51° 58′ 30″ S, 65° 01′ W. Commercial otter trawl, 145–143 m.: 2 female specimens, 280, 290 mm. (width of disc 170, 180 mm.).

St. WS 94. 16. iv. 27. 50° 00′ 15″ S, 64° 57′ 45″ W. Commercial otter trawl, 110–126 m.: 5 male specimens, 110–325 mm. (width of disc 65–210 mm.), 1 female, 350 mm. (width of disc 220 mm.).

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 109–108 m.: 5 male specimens, 225–380 mm. (width of disc 140–240 mm.), 1 female, 185 mm. (width of disc 112 mm.).

St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 96 m.: 4 male specimens, 112–320 mm. (width of disc 66–200 mm.), 1 female, 325 mm. (width of disc 195 mm.).

St. WS 108. 25. iv. 27. 48° 30′ 45″ S, 63° 33′ 45″ W. Commercial otter trawl, 118–120 m.: 2 male specimens, 350, 400 mm. (width of disc 210, 245 mm.), 1 female, 90 mm. (width of disc 45 mm.).

St. WS 109. 26. iv. 27. 50° 18′ 48″ S, 58° 28′ 30″ W. Commercial otter trawl, 145 m.: 1 female specimen, 320 mm. (width of disc 200 mm.).

St. WS 222. 8. vi. 28. 48° 23′ S, 65° 00′ W. Net (7 mm. mesh) attached to back of trawl, 100–106 m.: 1 male specimen, 82 mm. (width of disc 47 mm.). Commercial otter trawl, 100–106 m.: 1 male specimen, 145 mm. (width of disc 90 mm.).

St. WS 223. 8. vi. 28. 49° 13′ S, 64° 52′ W. Commercial otter trawl, 114 m.: 1 male specimen, 225 mm. (width of disc 130 mm.).

St. WS 229. 1. vii. 28. 50° 35′ S, 57° 20′ W. Commercial otter trawl, 210–271 m.: 1 male specimen, 135 mm. (width of disc 85 mm.).

St. WS 239. 15. vii. 28. 51° 10′ S, 62° 10′ W. Commercial otter trawl, 196–193 m.: 2 male specimens, 285, 305 mm. (width of disc 175, 195 mm.), 1 female, 275 mm. (width of disc 160 mm.).

St. WS 243. 17. vii. 28. 51° 06′ S, 64° 30′ W. Commercial otter trawl, 144–141 m.: 2 females, 88, 130 mm. (width of disc 48, 80 mm.), and 10 egg-capsules.

St. WS 765. 17. x. 31. 45° 07′ S, 60° 28′ 15″ W. Commercial otter trawl, 113–118 m.: 1 male specimen, 360 mm. (width of disc 235 mm.).

St. WS 775. 2. xi. 31. 46° 44′ 45″ S, 63° 33′ W. Commercial otter trawl, 115–110 m.: 1 male specimen, 330 mm. (width of disc 210 mm.).

St. WS 776. 3. xi. 31. 46° 18′ 15″ S, 65° 02′ 15″ W. Commercial otter trawl, 107–99 m.: 1 male specimen, 330 mm. (width of disc 195 mm.), 1 female, 280 mm. (width of disc 175 mm.).

St. WS 782. 4. xii. 31. 50° 29′ 15″ S, 58° 23′ 45″ W. Commercial otter trawl, 141–146 m.: 2 female specimens, 210, 215 mm. (width of disc 125, 130 mm.).

St. WS 787. 7. xii. 31. 48° 44′ S, 65° 24′ 30″ W. Commercial otter trawl, 106–110 m.: 3 male specimens, 360–395 mm. (width of disc 210–245 mm.), 2 females, 325, 335 mm. (width of disc 190, 200 mm.).

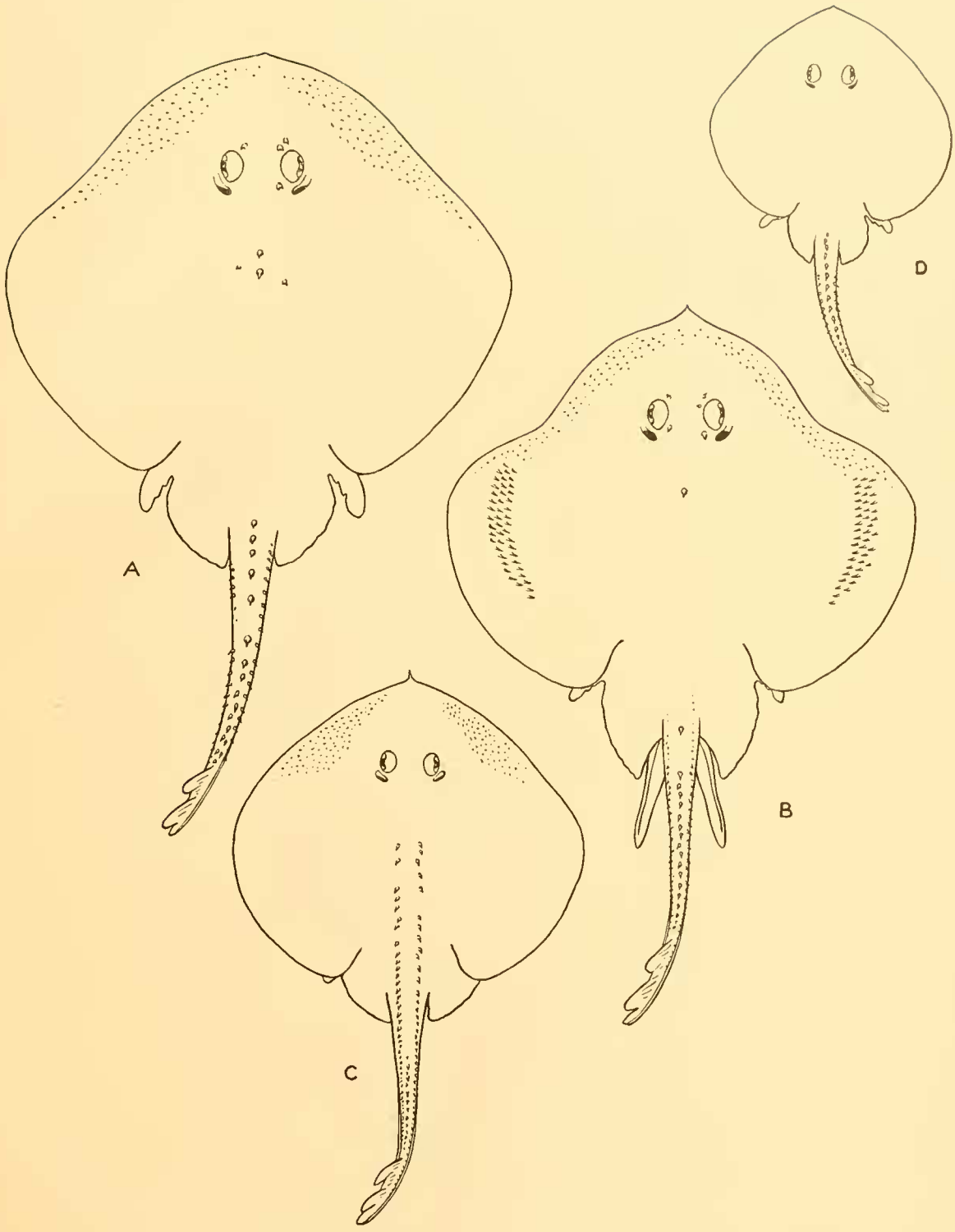

Fig. 10. *Psammobatis scobina.* A, mature female; B, mature male; C, half-grown female; D, young male. $\times \frac{1}{3}$.

St. WS 788. 13. xii. 31. 45° 05′ S, 65° 00′ W. Commercial otter trawl, 82–88 m.: 2 male specimens, 370, 375 mm. (width of disc 230, 235 mm.).

St. WS 797. 20. xii. 31. 47° 47′ 43″ S, 64° 07′ 30″ W. Commercial otter trawl, 111–114 m.: 1 female specimen, 78 mm. (width of disc 43 mm.). Seine net attached to back of trawl, 115–111 m.: 1 male specimen, 85 mm. (width of disc 53 mm.).

St. WS 798. 21. xii. 31. 47° 32′ S, 65° 02′ W. Net (4 mm. mesh) attached to back of trawl, 49–66 m.: 1 male specimen, 76 mm. (width of disc 42 mm.).

St. WS 810. 9. i. 32. 49° 17′ S, 67° 08′ W. Commercial otter trawl, 95–96 m.: 10 male specimens, 155–195 mm. (width of disc 95–125 mm.), 7 females, 170–210 mm. (width of disc 103–125 mm.).

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 202–238 m.: 1 female specimen, 390 mm. (width of disc 255 mm.).

Disc broader than long, its width $\frac{3}{5}$ to a little more than $\frac{2}{3}$ of the total length; nearly circular in young; anterior margins scarcely undulated, not emarginate in females or immature males, notched in mature males; outer angles broadly rounded. Vent nearer to tip of snout than to end of tail. Snout not produced, but often with a small barbel-like process, sometimes borne on a small fleshy projection; this process may be absent altogether, or may persist even in the adult; length of snout $4\frac{4}{5}$ to about 6 in width of disc; interorbital width equal to or rather greater than longitudinal diameter of eye; length of eye + spiracle about twice in that of snout. Internasal width $2\frac{1}{2}$ to nearly 3 in praeoral length of snout. Mouth a little undulated in females and immature males, but with a marked concavity in the upper jaw in mature males; in females and immature males the teeth are nearly flat, in mature males the median teeth have pointed crowns, but laterally the points are directed towards the corners of the mouth, and the extreme lateral teeth are more or less flat; in some specimens the crowns are so much worn that all the teeth appear flat; 28 to 40 rows of teeth in the upper jaw. Upper surface of disc in the young of both sexes covered with minute spinules and rough to the touch; the spinules are most numerous on the anterior parts of the pectoral fins, on the snout, round the eyes, and along the back; there are no enlarged spines on the disc, but an irregular median series of spines of moderate size on the tail, which commences behind the pelvics; upper surface of tail covered with small spinules, which are rather larger than those on the disc. In larger specimens there are generally 1 to 4 median spines on the nuchal region; 1 to 3 praeocular and 1 to 4 postocular spines, the two series sometimes united to form a row of 6 or 7 spines above each orbit; no scapular spines; small spines on anterior parts of pectorals, on snout, round the eyes, and on the back, but the disc is otherwise smooth; tail with 3 rather irregular rows of larger spines, the 2 outer series in some individuals extending anteriorly on to the disc as far as the suprascapulary region. Mature males with 2 to 4 series of alar spines. Lower surface quite smooth. Dorsal fins close together, generally more or less united, separated from or continuous with the caudal fin (when this is present). Brownish or greyish, with or without a number of small scattered dark spots; sometimes, in addition, some small, rounded, white spots of varying size, which may be more or less symmetrically arranged; tail in young often with 2 broad pale cross-bars on its upper surface; lower surface of disc and tail usually uniformly yellow or white.

Hab. Coasts of Argentina, Patagonia and Chile.

In addition to the specimens listed above, there are 8 specimens in the British Museum, 90–275 mm. in total length (width of disc 55–180 mm.), from Cape Virgins and the Straits of Magellan, including the type of *Psammobatis rudis*.

I have not examined any material from the coast of Chile, but have little doubt that Philippi's *Raja scobina* represents the species described by Günther as *Psammobatis rudis*. Examination of mature males of this species shows that Garman's *Malacorhina mira* is an undoubted *Psammobatis*, and in all probability represents the same species.

Psammobatis microps (Günther).

Raia microps, Günther, 1880, *Shore Fish.* '*Challenger*', p. 12, pl. iv; Berg, 1895, *Anal. Mus. Nac. B. Aires*, iv, p. 14; Evermann and Kendall, 1906, *Proc. U.S. Nat. Mus.*, xxxi, p. 70; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, xxxvi, p. 359; Devincenzi, 1920, *Anal. Mus. Montevideo* (ii) 1 (4), p. 127.

? *Raia marplatensis*, Marini, 1935, *Physis*, xi, p. 503, fig.

Disc broader than long, its width about $\frac{3}{5}$ of the total length; anterior margins scarcely undulated; outer angles rounded. Vent a little nearer to tip of snout than to end of tail. In the immature male there is a minute barbel-like process at the tip of the snout. Snout not produced, its length $4\frac{1}{2}$ to $4\frac{3}{4}$ in width of disc; interorbital width 2 or 3 times the longitudinal diameter of the eye, which is about equal to or less than the width of the spiracle; length of eye + spiracle $3\frac{2}{3}$ to nearly 4 in that of snout. Internasal width 2 to $2\frac{1}{4}$ in praeoral length of snout. Mouth a little curved; teeth more or less flat and close-set; about 40 rows in the upper jaw. Upper surface of disc mainly smooth, but with areas of minute spinules on anterior margins of pectoral fins, on the snout, round the eyes, and along the back; in the immature male there is a single median spine in the suprascapulary region, and a series of 11 enlarged sharply pointed spines on the tail, extending from the pelvic region to the first dorsal; in the large female there is a short row of 7 spines on the suprascapulary region and about 17 spines of varying sizes on the tail; in this specimen there are no other enlarged spines on the back, but the minute spinules are arranged in 3 series, the two outer ones being continued on the tail; a single large buckler-like spine near the front margin of each pectoral fin; no ocular spines in the immature male, but in the large female there are 2 above each orbit and 1 close to each spiracle; lower surface smooth or with a narrow rough strip along the anterior margin of each pectoral. Muciferous tubes in the nuchal region very conspicuous, arranged like a fan on each side of the occiput, each opening by a pore. Uniformly brownish above, white below.

Hab. Mouth of the Rio Plata.

Described from the type of the species, a male, 390 mm. in total length (width of disc 260 mm.), and a female, 780 mm. long (width of disc 510 mm.). The mature male of this species has not yet been described. *Raia marplatensis* (type a female of 162 mm.) is probably based upon young examples of this species.

Psammobatis lima (Poeppig).

Raja lima, Poeppig, 1835, *Reise Chili*, I, p. 148; Duméril, 1865, *Hist. Nat. Poiss.*, I, p. 553; Philippi, 1892, *An. Mus. Nac. Chile*, I. Zool., p. 2, pl. i, fig. 3; Delfin, 1901, *Cat. Peces Chile*, p. 23; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 359; Fowler, 1927, *Proc. Acad. N.S. Philad.*, LXXVIII, p. 276.

? *Raia chilensis*, Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 367.

? *Raja acanthostyla*, Philippi, 1896, *An. Univ. Chile*, XCIII, p. 388.[1]

Raja chilensis, Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 332, pl. xxi, fig. 15; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 211.

Raja steindachneri, Delfin, 1901, *Cat. Peces Chile*, p. 23; Fowler, 1910, *Proc. Acad. N.S. Philad.*, LXII, p. 468; Evermann and Radcliffe, 1917, *Bull. U.S. Nat. Mus.*, XCV, p. 14.

Raja burgeri, Delfin, 1902, *Revist. Chil.*, VI (4), p. 267, pl. xii.

Disc broader than long, its width $\frac{2}{3}$ to $\frac{3}{4}$ of the total length; anterior margins scarcely undulated; outer angles rounded. Vent about equidistant from tip of snout and end of tail or nearer to the latter. Snout with a very small blunt projection, but no barbel-like process, its length $5\frac{1}{3}$ to $6\frac{1}{3}$ in width of disc; interorbital width 3 to nearly 4 times the longitudinal diameter of the eye, which is much less than the width of the spiracle; length of eye + spiracle $2\frac{1}{4}$ to $2\frac{1}{2}$ in that of snout. Internasal width about $1\frac{1}{2}$ in praeoral length of snout. Mouth nearly straight or with a shallow emargination in the upper jaw; 40 to 44 rows of teeth in upper jaw. Upper surface of disc mainly smooth, but with areas of minute spinules on anterior margins of pectoral fins, on the snout, round the eyes, and along the back; sometimes a patch of larger spinules on the hinder part of each pectoral; sometimes an irregular median row of enlarged spines from the nuchal region to the first dorsal fin, sometimes 10 or 11 large spines along the tail but none on the disc; sometimes one praeocular and one postocular spine; lower surface with a narrow rough strip along the anterior margin of each pectoral. More or less uniformly greyish or brownish above; lower surface white, the outer parts of the pectoral fins grey.

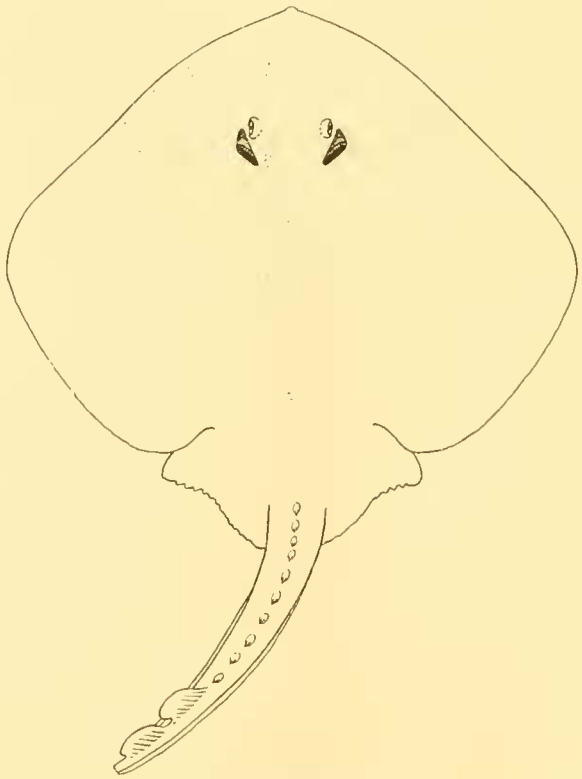

Fig. 11. *Psammobatis lima*. Female. $\times\frac{1}{4}$.

Hab. Coasts of Chile and Peru.

Described from 3 specimens, 1 male, 350 mm. long (width of disc 240 mm.) and 2 females, 400 and 450 mm. long (width of disc 300 and 320 mm.) from the Gulf of

[1] The type is a male, 460 mm. long (width of disc 250 mm.).

Arauco (Cavendish Bentinck). I have not seen a mature male of this species, but it seems possible that Philippi's description of *Raja acanthostyla* is based upon such a specimen.

Psammobatis brevicaudatus, Cope.

1877, *Proc. Amer. Phil. Soc.*, XVII, p. 48; Fowler, 1910, *Proc. Acad. N.S. Philad.*, LXII, p. 471, fig. 2; Garman, 1913, *Mem. Mus. Comp. Zoöl.*, XXXVI, p. 371.

Disc much broader than long, its width about $\frac{5}{6}$ of the total length; anterior margins notched; outer angles obtusely pointed. "Snout produced like a small papilla between the ends of the pectorals", its length about 7 in width of disc; interorbital width greater than length of eye + spiracle, which is about twice in length of snout. "Top of head and a band along the anterior part of the disc, above and below, rough with minute spines; disc elsewhere smooth, excepting two spines in front of each orbit, a spine near the inner border of each spiracle, a row of a few spines near the edge of the disc opposite the eyes, a median row of 6 or 8 on the middle of the back, a double row parallel to the edge of the pectoral and a median series on the tail." Upper surface "plumbeous with darker shades".

Hab. Bay of Pacasmayo, Peru.

Known only from the type, a mature male, 307 mm. long (width of disc 270 mm.), preserved in the Academy of Natural Sciences, Philadelphia.

CHIMAERIDAE

Callorhynchus callorhynchus (Linnaeus).[1]

Chimaera callorhynchus, Linnaeus, 1758, *Syst. Nat.*, ed. 10, p. 236.

Callorhynchus antarcticus, Schinz, 1822, in Cuvier, *Thierreich*, II, p. 239; Günther, 1870, *Cat. Fish.*, VIII, p. 351.

Callorhynchus callorhynchus, Garman, 1904, *Bull. Mus. Comp. Zoöl.*, XLI, p. 271, pl. vii, figs. 7–9, pl. x; Garman, 1911, *Mem. Mus. Comp. Zoöl.*, XL, p. 98.

Callorhynchus smythii, (Lay and Bennett) Garman, 1904, *t.c.*, p. 271, pl. vi, figs. 1–4; Garman, 1911, *t.c.*, p. 98.

St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 96 m.: 1 female specimen, 495 mm.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 01′ 51″ W. Commercial otter trawl, 67–65 m.: 2 male specimens, 320, 620 mm., 4 females, 330–500 mm.

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Commercial otter trawl, 87–82 m.: 9 male specimens, 265–315 mm., 2 females, 280, 290 mm.

St. WS 847. 9. ii. 32. 50° 15′ 45″ S, 60° 57′ W. Commercial otter trawl, 51–56 m.: 1 female specimen, 800 mm.

Hab. Both coasts of South America, from southern Brazil to Peru.

Garman recognized two species from South America, distinguished by differences in the dentition and in the size of the pectoral fins. In *C. callorhynchus* the tritors of the palatine laminae are said to have the form of elongate parallel bars in the young (as in the young of all species), but in the adult these fuse to form a single tritor with 2 rather

[1] For full synonymy of this species see Garman (1911).

broad and thick anterior prongs, of which the outer is the shorter. He gives no measurements of his specimens, nor does he indicate at what size the fusion of the tritors takes place. The pectorals are said to extend beyond the middle of the bases of the pelvics. In the species from Chile and Peru, identified by him as *C. smythii*, the tritors of the palatine laminae are said to persist as separate, elongate, parallel bars, and the pectorals not to reach the pelvics. Among the material collected by the 'Discovery' Expedition, all the smaller specimens (270–330 mm.) exhibit the elongate parallel tritors, and the same condition is found in two larger examples (495 and 800 mm.).[1] In two other

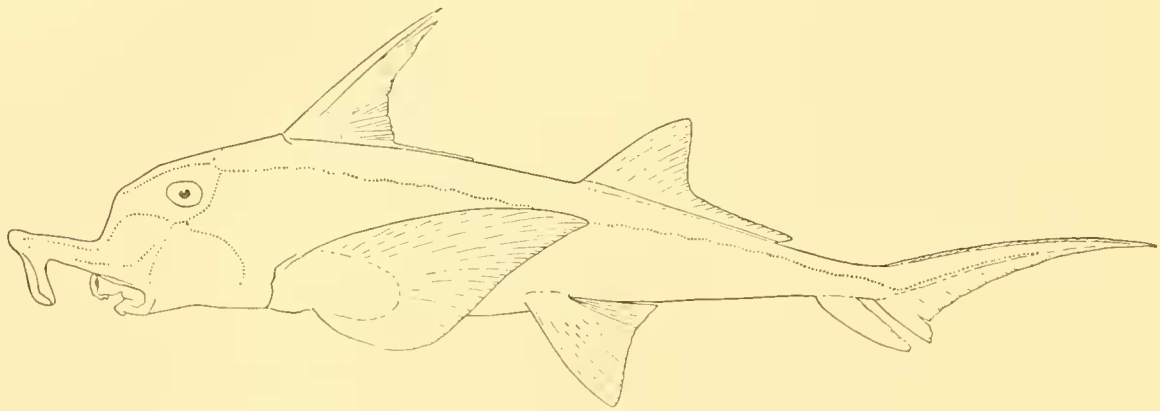

Fig. 12. *Callorhynchus callorhynchus*. Specimen from the coast of Uruguay. $\times \frac{1}{4}$.

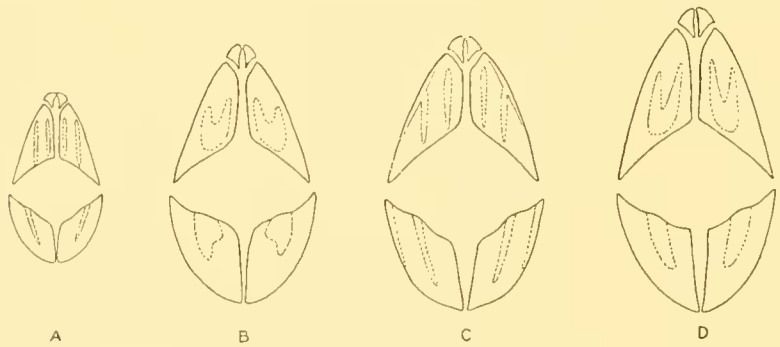

Fig. 13. Dental laminae of *C. callorhynchus*. A, female, 330 mm.; B, female, 495 mm.; C, female, 500 mm.; D, male, 620 mm. $\times \frac{3}{4}$.

specimens (500 and 620 mm.) the tritors have the form described by Garman for *C. callorhynchus*. I find the length of the pectoral fins very variable and quite unreliable as a specific character. There is certainly no correlation between the length of these fins and the form of the dental laminae in the specimens examined by me, and it would appear that the two species *callorhynchus* and *smythii* cannot be maintained on the basis of these characters. It is probable that the examination of an adequate series of specimens would show that the nominal species *capensis*, from South Africa, and *milii*, from Australia, Tasmania, and New Zealand, are nothing more than varieties of *C. callorhynchus*.

[1] The same condition is to be seen in a specimen of 550 mm. from off the coast of Uruguay (Marini).

CLUPEIDAE

Key to the South American species of Clupea

I. Pelvic fins 8-rayed; ventral scutes feebly keeled and not sharply pointed.

A. 38 to 40 gill-rakers on lower part of anterior arch; depth 4 to 5, head 4 to $4\frac{1}{2}$ in length; eye nearly 4 in head ... ... *fuegensis*, Jenyns.

B. 75 to 95 gill-rakers on lower part of anterior arch; depth $3\frac{1}{2}$ to 4, head $3\frac{1}{3}$ to $3\frac{2}{3}$ in length; eye $4\frac{1}{4}$ to $4\frac{1}{2}$ in head ... ... *bentincki*, Norman

II. Pelvic fins 7-rayed; ventral scutes strongly keeled and acutely pointed; 25 to 30 gill-rakers on lower part of anterior arch.

A. Anal 22–23; depth 3 to $3\frac{1}{2}$ in length ... ... *arcuata*, Jenyns.

B. Anal 17–20; depth $3\frac{1}{3}$ to 4 in length ... ... *melanostoma*, Eigenmann.

Clupea fuegensis, Jenyns.

1842, *Zool.* '*Beagle*', Fish., p. 133; Günther, 1868, *Cat. Fish.*, VII, p. 413; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 59, pl. v, fig. 41; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 231; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 88; Regan, 1916, *Ann. Mag. Nat. Hist.* (8) XVIII, p. 4.

Clupea arcuata, Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 16, pl. ii, fig. 2.

2. ii. 27. Stanley Harbour, Falklands. Hand net, surface: 3 specimens, 112–132 mm.

St. WS 86. 3. iv. 27. 53° 53′ 30″ S, 60° 34′ 30″ W. Commercial otter trawl, 151–147 m.: 3 specimens, 168–195 mm.

St. WS 89. 7. iv. 27. 9 miles N 21° E of Arenas Point Light, Tierra del Fuego. Commercial otter trawl, 23–21 m.: 3 specimens, 73–91 mm.

St. WS 214. 31. v. 28. 48° 25′ S, 60° 40′ W. Net (7 mm. mesh) attached to back of trawl, 208–219 m.: 5 specimens, 52–60 mm.

St. WS 220. 3. vi. 28. 47° 56′ S, 62° 38′ W. Net (7 mm. mesh) attached to back of trawl, 108–104 m.: 13 specimens, 50–69 mm.

St. WS 223. 8. vi. 28. 49° 13′ S, 64° 52′ W. Net (7 mm. mesh) attached to back of trawl, 114 m.: 1 specimen, 45 mm.

St. WS 242. 17. vii. 28. 51° 06′ S, 66° 30′ W. Nets (4 and 7 mm. mesh) attached to back of trawl, 119–119 m.: 4 specimens (150–165 mm.).

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. 1 m. tow-net, 16–0 m.: 25 specimens, 45–55 mm.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 01′ 51″ W. Commercial otter trawl, 67–65 m.: 40 specimens, 100–170 mm.

St. WS 781. 6. xi. 31. 50° 30′ S, 58° 50′ W. Commercial otter trawl, 148 m.: 3 specimens, 180–205 mm.

St. WS 851. 11. ii. 32. 51° 39′ 30″ S, 62° 01′ 15″ W. Commercial otter trawl, 221–197 m.: 15 specimens, 165–195 mm.

Depth of body 4 to 5 in the length, length of head 4 to $4\frac{1}{2}$. Snout as long as or a little longer than eye, diameter of which is nearly 4 in length of head. Maxillary extending nearly or quite to below middle of eye. An elongate patch of minute teeth on tongue; usually a series on palatines; vomer toothless. 38 to 42 gill-rakers on lower part of anterior arch. Praeoperculum narrower than operculum, which is as broad as diameter of eye. About 50 scales in a longitudinal and 14 in a transverse series; ventral scutes feebly keeled and not sharply pointed, 22–25 + 10–13. Dorsal 16–19. Anal

17–20. Pelvics 8-rayed, inserted in or a little behind the vertical from origin of dorsal, rarely a little in advance of it. Vertebrae 49–51.

Hab. Patagonian-Falklands region; Straits of Magellan.

In addition to the above, there are a number of specimens from the Falklands in the British Museum, including some collected from the shore by Mr Hamilton and Mr Bennett. The fish is known locally as "Herring" or "Pilchard", and in size and other characteristics is more or less intermediate between the European Herring and

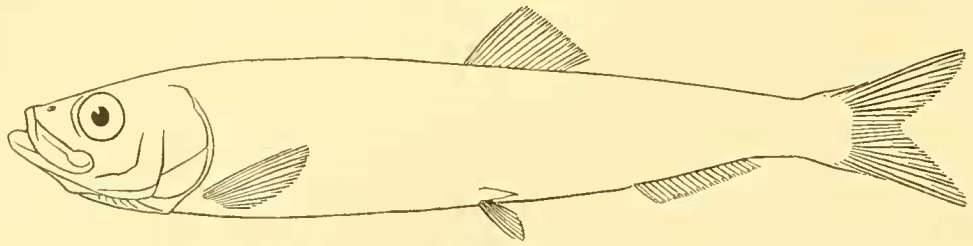

Fig. 14. *Clupea fuegensis.* × $\frac{2}{3}$.

Sprat. Mr Bennett notes that its occurrence is very erratic, but he does not know of its capture before 5 October or after April. An occasional shoal is heralded by hundreds and even thousands of shags. Locally there is no means of catching the fish unless they approach close enough to the shore to enable a seine to be used. Hussakof records that the native Indians go out in boats to the kelp, and catch the fishes in their hands, while they are feeding. In February 1904, an extraordinary shoal of these fishes entered Stanley Harbour, and it is recorded that they formed the staple diet of the inhabitants for days.

Clupea bentincki, Norman.

1936, *Ann. Mag. Nat. Hist.* (10) XVII, p. 491.

Hab. Chile.

This is the fish commonly known in Chile as "Sardina", and proves to be distinct from *C. fuegensis*. A fine series of specimens from Talcahuano, where it is said to be very common, has been received from Mr Cavendish Bentinck.

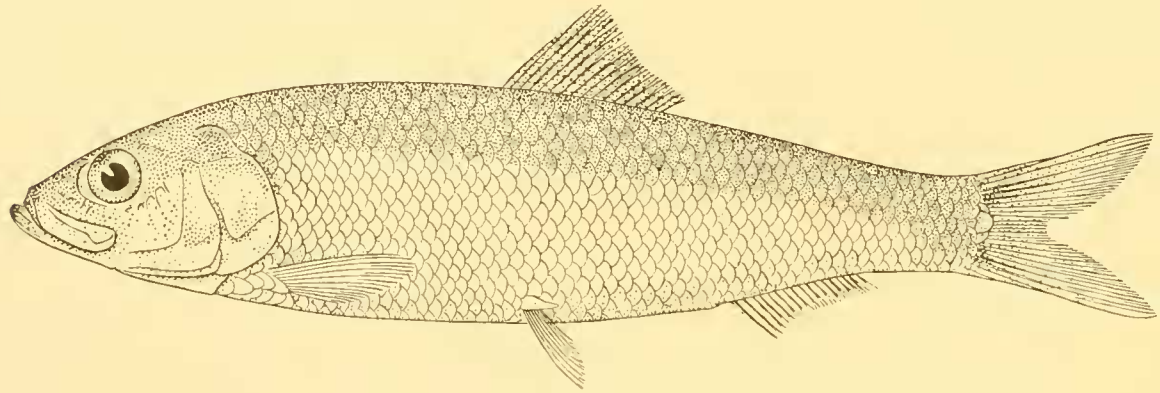

Fig. 15. *Clupea bentincki.* Holotype. × 1.

Clupea arcuata, Jenyns.

1842, *Zool.* '*Beagle*', Fish., p. 134; Günther, 1868, *Cat. Fish.*, VII, p. 442; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 19; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 62, pl. v, fig. 42; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 405; Regan, 1917, *Ann. Mag. Nat. Hist.* (8) XIX, p. 228.

St. WS 89. 7. iv. 27. 9 miles N 21° E of Arenas Point Light, Tierra del Fuego. Commercial otter trawl, 23–21 m.: 1 specimen, 85 mm. Net (7 mm. mesh) attached to back of trawl, 23–21 m.: 36 specimens, 42–95 mm.

Depth of body 3 to $3\frac{1}{2}$ in the length, length of head 4 to $4\frac{1}{2}$. Diameter of eye 3 to $3\frac{1}{2}$ in length of head. Maxillary extending to below anterior $\frac{1}{3}$ of eye. A narrow strip of teeth on tongue; palate toothless. About 28 gill-rakers on lower part of anterior arch. About 42 scales in a longitudinal and 15 in a transverse series; ventral scutes strongly keeled and acutely pointed, 18–19 + 9–10. Dorsal 16–18, origin nearer to base of caudal than to end of snout. Anal 22–23. Pelvics 7-rayed; inserted below or a little in advance of origin of dorsal. A note on the label states that in life this fish is silvery,

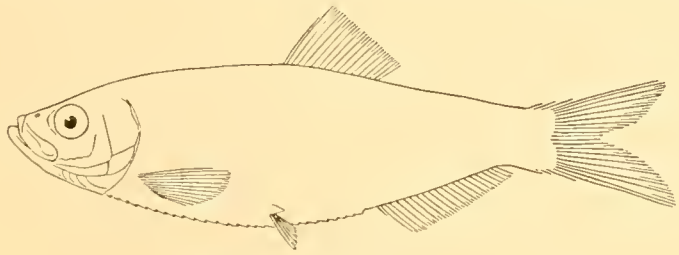

Fig. 16. *Clupea arcuata.* × 1.

but pale lustrous blue dorsally; in younger specimens the yellow muscles appear through the silver; caudal fin yellow, fringed with grey.

Hab. Uruguay to Tierra del Fuego.

There are 3 specimens in the British Museum from Montevideo, which have been compared by Regan with the types of the species from Bahia Blanca, preserved in the Zoological Museum, Cambridge. This is a smaller species than *C. fuegensis*, and very similar in appearance to the European Sprat (*C. sprattus*), from which it may be distinguished by the more numerous gill-rakers.

Clupea melanostoma (Eigenmann).

? *Sardinella arcuata* (*non* Jenyns), Evermann and Kendall, 1906, *Proc. U.S. Nat. Mus.*, XXXI, p. 74.

Pomolobus? *melanostomus*, Eigenmann, 1907, *Proc. Washington Acad. Sci.*, VIII, p. 452, pl. XXXIII, fig. 6.

Clupea melanostoma, Regan, 1917, *Ann. Mag. Nat. Hist.* (8) XIX, p. 229.

Closely related to *C. arcuata*, but with rather more slender body ($3\frac{1}{3}$ to 4) and smaller head ($4\frac{1}{2}$ to 5). Dorsal 15–16; anal 17–20.

Hab. Rio Plata.

GALAXIIDAE

Galaxias attenatus (Jenyns).

Regan, 1906, *Proc. Zool. Soc.*, 1905 (2), p. 368, pl. xii, fig. 1, pl. xiii, fig. 2.

Hab. South Australia, Victoria, New South Wales; Tasmania; New Zealand and neighbouring islands; Patagonia; Falklands; Tierra del Fuego; Chile.

No specimens were obtained by the expedition, but I have received one (75 mm.) from Mr Bennett, taken by a seine net in Weir Creek, Stanley, Falkland Islands, in November, 1933. This is one of the fishes known locally as "Smelt", and is said to be excellent as food. The maximum size attained is about 6 in.

Galaxias maculatus (Jenyns).

Regan, 1906, *t.c.*, p. 370.

Hab. Patagonia; Falklands; Tierra del Fuego; southern Chile.

No specimens were obtained by the expedition, but there are several in the British Museum from the Falkland Islands, Alert Bay, Orange Bay, Estero de Penco, and Nige Totten, Chile. In the Falklands, where it is abundant in certain small brooks and streams, this fish is known as "Trout", but the same name appears to be used for *Aplochiton zebra*. The occurrence of *Galaxias maculatus* in the sea has been recorded by Valenciennes and by Philippi off the Falklands and off the coast of Chile respectively.

APLOCHITONIDAE

Aplochiton zebra, Jenyns.

1842, *Zool.* '*Beagle*', Fish., p. 131, pl. xxiv fig. 1.

Haplochiton zebra, Günther, 1864, *Cat. Fish.*, v, p. 381; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, v (6), p. 22.

No specimens of this species were obtained by the expedition, but Mr Bennett has sent one (about 300 mm.) collected in the Falkland Islands in 1912. This species is known locally as "Trout".

OPHICHTHYIDAE

Ophichthus callaensis, Günther.

1873, *J. Mus. Godeffroy*, iv, p. 92; Evermann and Radcliffe, 1917, *Bull. U.S. Nat. Mus.*, xcv, p. 25.

St. WS 673. 8. vii. 31. 11° 23′ 36″ S, 77° 3′ W. 70 cm. tow-net, 47–0 m.: 5 specimens, 91–137 mm.

Hab. Peru.

SYNGNATHIDAE

Leptonotus blainvilleanus (Eydoux and Gervais). "Aguja"; "Haouch appourr'h".

Syngnathus blainvilleanus, Eydoux and Gervais, 1837, *Poiss. de la* '*Favorite*', in *Magasin de Zool.*, vii, p. 3, pl. xvii; Günther, 1870, *Cat. Fish.*, viii, p. 162; Thompson, 1916, *Proc. U.S. Nat. Mus.*, l, p. 423.

Leptonotus blainvilleanus, Vaillant, 1888, *Miss. Sci. Cap Horn*, vi. Zool., Poiss., p. 16; Duncker, 1915, *Jahrb. Hamburg. Wiss. Anst.*, xxxii, p. 88.

St. WS 593. 18. v. 31. 35° 36′ S, 72° 44′ W. 1 m. tow-net, 30–0 m.: 1 specimen, 78 mm.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 01′ 51″ W. Commercial otter trawl, with seine net attached, 67 m.: 4 specimens, 86–110 mm.

Hab. Both coasts of South America from northern Patagonia to Chile and Peru.

These young specimens appear to belong to this species, which has not been previously recorded from the eastern side of Patagonia. In the young stages it is very difficult to separate from *Syngnathus acicularis*, Jenyns, and some of the records of the latter from the coast of Argentina may refer to *Leptonotus*.

Fig. 17. *Leptonotus blainvilleanus*. Specimen from St. WS 762. × 1.

MACRURIDAE

Coryphaenoides holotrachys (Günther).

Macrurus holotrachys, Günther, 1878, *Ann. Mag. Nat. Hist.* (5) II, p. 24; Günther, 1887, *Deep-Sea Fish. 'Challenger'*, p. 136, pl. xxviii, fig. B; Goode and Bean, 1895, *Ocean. Ichth.*, p. 396; Lahille, 1915, *Anal. Mus. Nac. B. Aires*, XXVI, p. 26, pl. vi.

? *Macrurus*, sp. (conf. *holotrachys*), Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 9.

Coryphaenoides holotrachys, Gilbert and Hubbs, 1916, *Proc. U.S. Nat. Mus.*, LI, p. 144; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 277.

St. WS 818. 17. i. 32. 52° 31′ 15″ S, 63° 25′ W. Commercial otter trawl, 278–284 m.: 4 specimens, 595–630 mm.

St. WS 819. 17. i. 32. 52° 41′ 52″ S, 62° 39′ 30″ W. Commercial otter trawl, 312–329 m.: 2 specimens, 560, 600 mm.

Snout rather produced (for a *Coryphaenoides*); mouth rather wide, the maxillary extending to below middle of eye or a little beyond; infraorbital ridge fairly prominent. Teeth forming a band in the upper jaw, those of the outer series somewhat enlarged; teeth of the lower jaw in several rows anteriorly, uniserial laterally. Barbel less than $\frac{1}{2}$ diameter of eye, which is greater than length of snout and $2\frac{3}{5}$ to nearly 3 in length of head; interorbital width 5 to $5\frac{1}{3}$. Dorsal II 9; serrations on spine feeble but quite distinct; distance from second dorsal $\frac{1}{4}$ or less than $\frac{1}{4}$ length of head. Origin of anal at distance from head equal to about $\frac{4}{5}$ length of head. Pectoral with 17 to 19 rays; $\frac{1}{2}$ to $\frac{3}{5}$ length of head. Pelvics with 8 rays, outer ray filamentous, extending $\frac{3}{5}$ to $\frac{2}{3}$ of the distance from base of fin to origin of anal. Scales with a strong median spinule-bearing keel, flanked by several short rows of very small spinules, which are more or less parallel with the median keel or converge towards it; some of the scales on the sides of the head with 3 series of spinules converging anteriorly; 5 or 6 scales between dorsal fin and lateral line.

Hab. Coasts of Uruguay and Argentina; Patagonian-Falklands region; Straits of Magellan(?).

It is with some hesitation that I have identified the above specimens with *C. holotrachys*, since the type of that species is only 220 mm. in total length and accurate

comparison with the large examples is very difficult. The snout seems to be a little longer in the type and the mouth consequently occupies a more ventral position, but this is a character that may well change with growth.

Coryphaenoides whitsoni (Regan), from the Antarctic, is closely related, but the scales on the body have only one series of spinules and there are other minor differences. *C. carinatus* (Günther), from Prince Edward Island, has a somewhat smaller eye, smaller scales, and the pectoral fin has 21 rays.

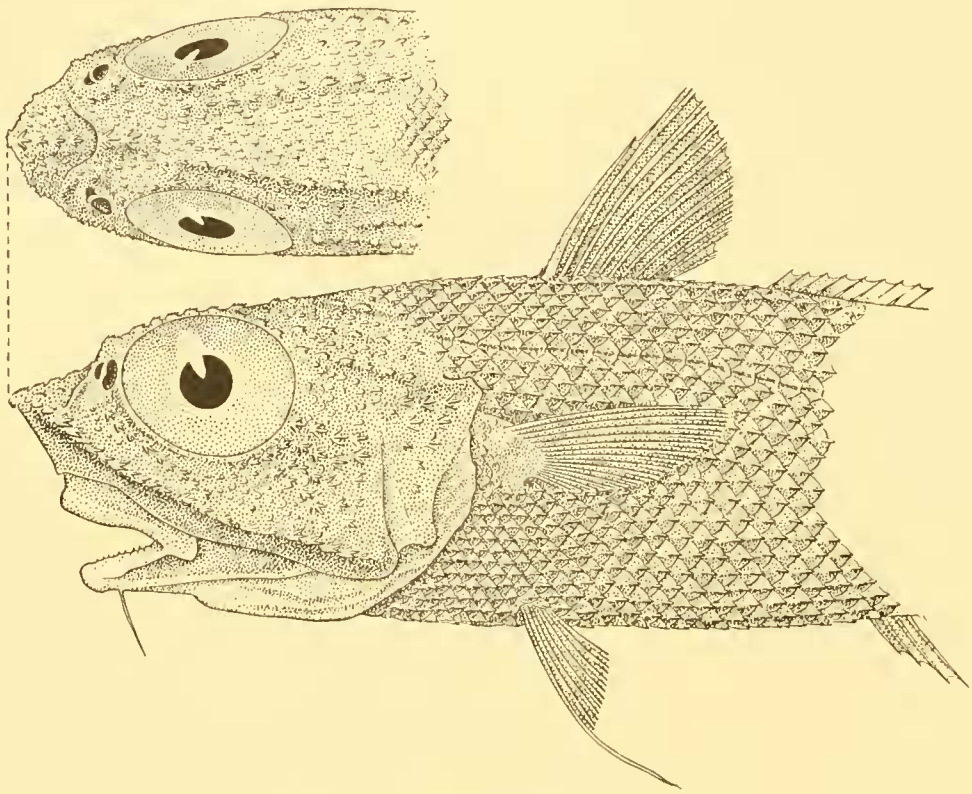

Fig. 18. *Coryphaenoides holotrachys.* $\times \frac{1}{2}$.

Coelorhynchus fasciatus (Günther).

Macrurus fasciatus, Günther, 1878, *Ann. Mag. Nat. Hist.* (5) II, p. 24; Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 129, pl. xxviii, fig. A.

Coelorhynchus fasciatus, Goode and Bean, 1895, *Ocean. Ichth.*, p. 402; Gilbert and Thompson, 1916, in Thompson, *Proc. U.S. Nat. Mus.*, L, p. 473.

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 191–238 m.: 9 specimens, 308–340 mm.

St. WS 820. 18. i. 32. 52° 53′ 15″ S, 61° 51′ 30″ W. Net (4 mm. mesh) attached to back of trawl, 351–367 m.: 1 specimen, 185 mm.

St. WS 821. 18. i. 32. 52° 55′ 45″ S, 60° 55′ W. Commercial otter trawl, 461–468 m.: 4 specimens, 290–350 mm.

Snout rather short; the maxillary extending to below middle of eye or a little beyond; infraorbital ridge fairly prominent. Teeth forming bands in both jaws. Barbel $\frac{1}{4}$ to $\frac{1}{3}$ diameter of eye, which is much greater than length of snout and $2\frac{1}{4}$ to $2\frac{2}{5}$ in length of

head; interorbital width $4\frac{3}{4}$ to $5\frac{1}{4}$. Dorsal II 9–10; length of spine $\frac{2}{3}$ to $\frac{4}{5}$ of that of head; distance from second dorsal equal to or rather less than length of its base. Origin of anal at distance from head which is much shorter than length of head without snout. Pectoral with 15 to 17 rays; $\frac{3}{5}$ to $\frac{2}{3}$ length of head. Pelvics with 7 rays, outer ray filamentous, about as long as pectoral, extending to beyond origin of anal. Scales with 8 to 18 series of spinules, which are more or less parallel on the body scales, but

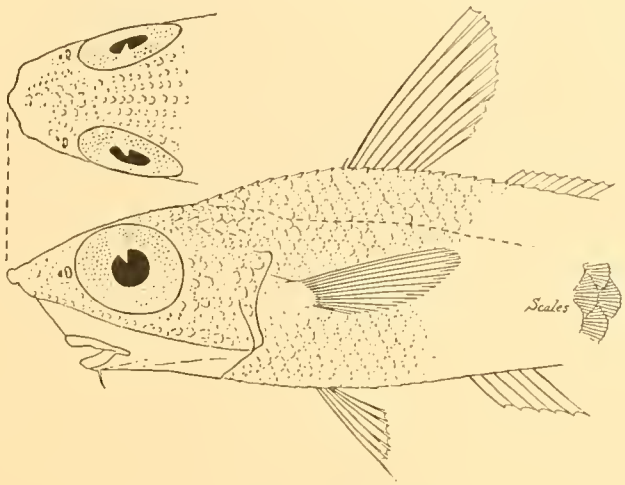

Fig. 19. *Coelorhynchus fasciatus*. $\times\frac{1}{2}$.

converge anteriorly on those of the head; 3 or 4 scales between dorsal fin and lateral line. A series of irregular dark cross-bars on the back.

Hab. Patagonian-Falklands region; Straits of Magellan; southern Chile; South Africa.

Three other species of *Coelorhynchus* have been described from this region: *C. marinii*, Hubbs, from Argentina and South Georgia; *C. patagoniae*, Gilbert and Thompson, from the west coast of Patagonia; and *C. chilensis*, Gilbert and Thompson, from off Lota, Chile.

MERLUCCIIDAE

Merluccius hubbsi, Marini. "Yapakama"; "Merluza".

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 6 specimens, 460–590 mm.

St. WS 78. 13. iii. 27. 51° 01′ S, 68° 04′ 30″ W. Commercial otter trawl, 95–91 m.: 6 specimens, 380–445 mm.

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–156 m.: 1 specimen, 720 mm.

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 1 specimen, 715 mm.

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 108–109 m.: 1 specimen, 130 mm.

St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 96 m.: 6 specimens, 225–280 mm.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 850 mm.

St. WS 108. 25. iv. 27. 48° 30′ 45″ S, 63° 33′ 45″ W. Large otter trawl, 118 m.: 1 specimen, 275 mm.

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 2 specimens, 705, 750 mm.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 01′ 51″ W. Commercial otter trawl, 67–65 m.: 3 specimens, 150–195 mm.

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Commercial otter trawl, 87–82 m.: 10 specimens, 100–260 mm.

St. WS 776. 3. xi. 31. 46° 18′ 15″ S, 65° 02′ 15″ W. Net attached to back of trawl, 107–99 m.: 22 specimens, 150–225 mm.

St. WS 788. 13. xii. 31. 45° 05′ S, 65° 00′ W. Commercial otter trawl, 82–88 m.: 25 specimens, 105–280 mm.

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 202–238 m.: 1 specimen, 900 mm.

St. WS 818. 17. i. 32. 52° 31′ 15″ S, 63° 25′ W. Commercial otter trawl, 278–284 m.: 1 specimen, 960 mm.

St. WS 855. 22. iii. 32. 45° 58′ 30″ S, 64° 11′ W. Commercial otter trawl, 115–110 m.: 12 specimens, 137–180 mm.

St. WS 857. 23. iii. 32. 47° 11′ 30″ S, 64° 12′ W. Commercial otter trawl, 122–124 m.: 1 specimen, 150 mm.

No data. 1 specimen, 880 mm.

For synonymy and description see below.

A Revision of the Species of *Merluccius*

The difficulty of distinguishing the species of this commercially important group of fishes has led me to undertake a revision of the genus.[1] Hake are to be found in both the North Temperate and the South Temperate regions, and, as far as I am able to judge from the material at my disposal, there are 3 species in the north and 4 in the south.

Key to the species

I. 100 to 150 scales in a longitudinal series; eye 4 to $7\frac{2}{3}$ in head (in specimens of 100–960 mm.).

A. 7 or 8 gill-rakers on lower part of anterior arch; pelvic as long as or nearly as long as pectoral, which is $1\frac{2}{3}$ to $1\frac{4}{5}$ in head ... ... *merluccius.*

B. 10 to 18 gill-rakers on lower part of anterior arch; pelvic nearly always shorter than pectoral.

1. Pectoral not or scarcely reaching vent, $1\frac{3}{5}$ to $1\frac{4}{5}$ in head; 10 to 13 gill-rakers on lower part of anterior arch; about 130 scales in a longitudinal series ... ... *hubbsi.*

2. Pectoral extending to vent or beyond, $1\frac{1}{4}$ to $1\frac{2}{3}$ in head.

a. Depth of body 7 to $7\frac{2}{3}$ in length; pelvic $2\frac{1}{4}$ to $2\frac{1}{2}$ in head, extending about $\frac{3}{5}$ of distance from its base to vent; 15 to 17 gill-rakers on lower part of anterior arch; 130 to 135 scales in a longitudinal series ... ... *productus.*

b. Depth of body 5 to $6\frac{1}{4}$ in length; pelvic $1\frac{2}{3}$ to $2\frac{1}{4}$ in head, extending $\frac{3}{5}$ to $\frac{5}{6}$ of distance from its base to vent.

α. 15 to 18 gill-rakers on lower part of anterior arch; pectoral with 15 or 16 rays; 110 to 115 scales in a longitudinal series; first dorsal with 11 rays ... *gayi.*

[1] A good summary of our knowledge of the genus has been given by Belloc (1929, *Rév. Trav. Pêches Marit.*, II, p. 153).

β. 10 to 14 (15) gill-rakers on lower part of anterior arch; pectoral with 13 or 14 rays.

* 100 to 110 scales in a longitudinal series; first dorsal with 12 or 13 rays; pelvic extending $\frac{3}{5}$ to $\frac{2}{3}$ of distance from its base to vent ... ... *bilinearis*.

** 130 to 140 scales in a longitudinal series; first dorsal with 10 or 11 rays; pelvic extending $\frac{2}{3}$ to $\frac{5}{6}$ of distance from its base to vent ... ... *capensis*.

II. 155 to 165 scales in a longitudinal series; eye 6 to $7\frac{1}{2}$ in head (in specimens of 340–350 mm.); 10 gill-rakers on lower part of anterior arch; pectoral extending to vent or beyond ... *australis*.

Merluccius merluccius (Linnaeus).

Gadus merluccius, Linnaeus, 1758, *Syst. Nat.*, ed. 10, p. 254.
Gadus ruber, Lacepède, 1803, *Hist. Nat. Poiss.*, v, p. 671.
Merluccius smiridus, Rafinesque, 1810, *Car. n. gen.*, p. 25.
Gadus merlus, Risso, 1810, *Ichth. Nice*, p. 122.
Gadus maraldi, Risso, 1810, *t.c.*, p. 123.
Onus riali, Rafinesque, 1810, *Ind. itt. Sicil.*, p. 12.
Merluccius vulgaris, Cloquet, 1824, *Dict. Sci. Nat.*, xxx, p. 168; Fleming, 1828, *Brit. Anim.*, p. 195; Günther, 1862, *Cat. Fish.*, iv, p. 344; Carus, 1889–93, *Prodr. Faun. Medit.*, ii, p. 573.
Gadus merluccius [*argentatus*], Faber, 1829, *Naturg. Fische Islands*, p. 91.
Merlucius ambiguus, Lowe, 1840, *Proc. Zool. Soc.*, p. 37.
Merlucius sinuatus, Swainson, 1840, in Lowe, *t.c.*, p. 38.
Merlucius lanatus, Gronovius, 1854, *Cat. Fish.*, ed. Gray, p. 130.
Epicopus gayi, Günther, 1860, *Cat. Fish.*, ii, p. 248.
Merluccius argentatus, Günther, 1862, *Cat. Fish.*, iv, p. 346.
Merluccius linnaei, Malm, 1877, *Göteborgs Bohus. Faun.*, p. 489.
Merluccius merluccius, Smitt, 1893, *Scand. Fish.*, i, p. 515, pl. xxv, fig. 1; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, xlvii (3), p. 2530.
Merlucius merluccius, Le Danois, 1920, *Notes Mém. Off. Sci. Tech. Pêches Marit.*, ii; Belloc, 1929, *Rév. Trav. Pêches Marit.*, ii, p. 180, figs. [*q.v.* for full synonymy].
Trachinoides moroccanus, Borodin, 1934, *Bull. Vanderbilt Mar. Mus.*, i (4), p. 120, pl. ii, figs. 2, 3.

Depth of body $5\frac{1}{2}$ to $6\frac{1}{4}$ in the length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$. Snout $1\frac{1}{2}$ times to more than twice as long as eye, diameter of which is 5 (young) to 7 in length of head; interorbital width about 4. Maxillary extending to below middle (young) or posterior edge of eye, length rather less than $\frac{1}{2}$ length of head. 7 or 8 gill-rakers on lower part of anterior arch. About 135 to 150 scales in a longitudinal series below lateral line. Dorsal (9) 10–11, 36–40; anal 36–39. Pectoral with (12) 13–14 rays, extending to or nearly to vent, length $1\frac{2}{3}$ to $1\frac{4}{5}$ in that of head. Pelvic extending $\frac{3}{5}$ to $\frac{2}{3}$ of the distance from its base to the vent, length $1\frac{4}{5}$ to about twice in that of head; insertion of pelvic equidistant from origin of anal and tip of lower jaw or a little nearer to the former.

Hab. Coasts of Europe from Norway to the Mediterranean; Greenland and Iceland; coasts of northern and north-western Africa; Madeira.

Described from 15 specimens, 120–800 mm. in total length.

Merluccius hubbsi, Marini.

Merluccius gayi (*non* Guichenot), Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) x [xxx], p. 627; Berg, 1895, *Anal. Mus. Nac. B. Aires*, iv, p. 74; Thompson, 1916, *Proc. U.S. Nat. Mus.*, l, p. 417; Devincenzi, 1924, *Anal. Mus. Montevideo*, (ii) 1 (5), p. 272; Fowler, 1927, *Proc. Acad. N.S. Philad.*, lxxviii, p. 274.

? *Merluccius gayi*, Cunningham, 1871, *Trans. Linn. Soc. London*, xxvii, p. 472; Vaillant, 1888, *Miss. Sci. Cap Horn*, vi. Zool., Poiss., p. 21.

Merluccius bilinearis, Ribeiro, 1915, *Arch. Mus. Nac. Rio Janeiro*, xvii, Merlucciidae, p. 2, fig.

Merluccius hubbsi, Marini, 1932, *Physis*, xi, p. 322, fig.

Depth of body $5\frac{3}{4}$ to nearly 8 in the length, length of head $3\frac{1}{2}$ to $3\frac{5}{6}$. Snout $1\frac{1}{4}$ times (young) to nearly 3 times (large specimens) as long as eye, diameter of which is 4 (young) to $7\frac{2}{3}$ in length of head; interorbital width about 4. Maxillary extending to below middle or posterior edge of pupil, length about $\frac{1}{2}$ that of head. Teeth fairly strong; irregularly biserial in lower jaw and anteriorly in upper jaw. 10 to 13 gill-rakers on lower part of anterior arch. About 130 scales in a longitudinal series below lateral line, about 10 in a transverse series between base of first ray of first dorsal fin and lateral line. Dorsal (11) 12–13, 36–39; anal 37–41. Pectoral with 12 to 14 rays, not

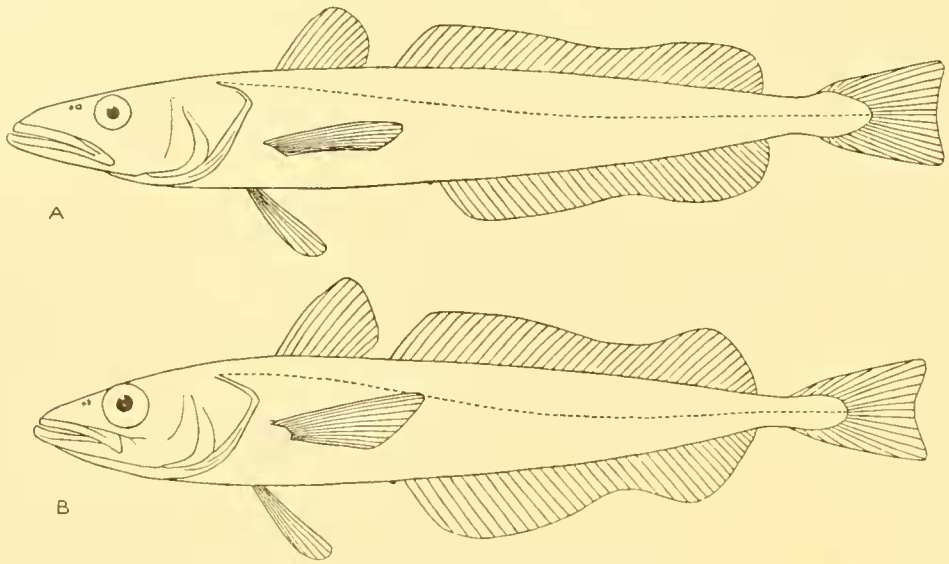

Fig. 20. A, *Merluccius hubbsi*; B, *Merluccius gayi*. $\times\frac{1}{4}$.

or scarcely extending to vent in adult and half-grown specimens, reaching to vent or a little beyond in young, length $1\frac{3}{5}$ to $1\frac{4}{5}$ in that of head. Pelvic extending about $\frac{1}{2}$ of the distance from its base to the vent in adult and half-grown specimens, to or nearly to the vent in young, length $1\frac{4}{5}$ to $2\frac{1}{3}$ in that of head; insertion of pelvic about equidistant from tip of lower jaw and origin of anal or a little nearer to the latter.

Hab. East Coast of South America, from Brazil to the Straits of Magellan.

Described from numerous specimens, 100–960 mm. in total length.

This species has been confused with *M. gayi*, which may be readily distinguished by the longer pectoral fin, extending to or beyond the origin of the anal, its length $1\frac{1}{3}$ to $1\frac{1}{2}$ in that of head. Further, if specimens of equal size are compared, it will be seen that the eye is a little larger, the maxillary shorter, the teeth smaller, etc. in *M. gayi*.

Merluccius productus (Ayres).

Merlangus productus, Ayres, 1855, *Proc. Calif. Acad. Nat. Sci.*, p. 64.

Homalopomus trowbridgii, Girard, 1856, *Proc. Acad. N.S. Philad.*, p. 132.

Gadus productus, Günther, 1862, *Cat. Fish.*, IV, p. 338.

Merluccius productus, Gill, 1863, *Proc. Acad. N.S. Philad.*, p. 247; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (3), p. 2531, fig. 884; Starks and Morris, *Univ. Calif. Publ. Zool.*, III (11), p. 241; Belloc, 1929, *Rév. Trav. Pêches Marit.*, II, p. 169, fig. 11.

Depth of body 7 to $7\frac{2}{3}$ in the length, length of head $3\frac{2}{3}$ to $3\frac{5}{6}$. Snout $1\frac{1}{3}$ times to twice as long as eye, diameter of which is $4\frac{3}{4}$ to 6 in length of head; interorbital width about 4. Maxillary extending to below middle of eye, length rather less than $\frac{1}{2}$ that of head. 15 to 17 gill-rakers on lower part of anterior arch. 130 to 135 scales in a longitudinal series below lateral line. Dorsal 11–12, 39–42; anal 41–43. Pectoral with 16 rays, extending to above origin of anal, length $1\frac{1}{4}$ to $1\frac{2}{5}$ in that of head. Pelvic extending about $\frac{3}{5}$ of the distance from its base to the vent, length $2\frac{1}{4}$ to $2\frac{1}{2}$ in that of head; insertion of pelvic very little nearer to origin of anal than to tip of lower jaw.

Hab. Pacific coast of America from Puget Sound to Point Loma, California.

Described from 5 specimens, 480–660 mm. in total length.

Merluccius gayi (Guichenot).

Merlus gayi, Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 329, pl. viii, fig. 2.

Merluccius gayi, Kaup, 1858, *Arch. Naturgesch.*, XXIV, p. 87; Günther, 1862, *Cat. Fish.*, IV, p. 346; Delfin, 1901, *Cat. Peces Chile*, p. 100; Delfin, 1903, *Revist. Chil.*, VII, p. 269, fig. 7; Evermann and Radcliffe, 1917, *Bull. U.S. Nat. Mus.*, XCV, p. 156.

? *Merluccius angustimanus*, Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 183, pl. xli, fig. 1, pl. lxxxii, fig. 1.

Depth of body $5\frac{2}{3}$ to 6 in the length, length of head $3\frac{3}{5}$ to $3\frac{3}{4}$. Snout $1\frac{1}{2}$ times to about twice as long as eye, diameter of which is $4\frac{3}{4}$ to $5\frac{1}{2}$ in length of head; interorbital width about 4. Maxillary extending to below middle of eye, length less than $\frac{1}{2}$ that of head. 15 to 18 gill-rakers on lower part of anterior arch. 110 to 115 scales in a longitudinal series below lateral line. Dorsal 11, 36–40; anal 37–39. Pectoral with 15 or 16 rays, extending to beyond origin of anal, length $1\frac{1}{3}$ to $1\frac{3}{5}$ in that of head. Pelvic extending $\frac{3}{5}$ to $\frac{2}{3}$ of the distance from its base to the vent, length 2 to $2\frac{1}{4}$ in that of head; insertion of pelvic nearer to origin of anal than to tip of lower jaw.

Hab. Coasts of Chile and Peru, perhaps extending northwards to the Gulf of Panama.

Described from 4 specimens, 360–485 mm. in total length.

This species is very similar to *M. capensis*, but has a rather smaller head and mouth, rather more gill-rakers, larger scales, and shorter pelvic fins.

Merluccius bilinearis (Mitchill).

Stomodon bilinearis, Mitchill, 1814, *Rept. Fish. N. York*, p. 7.

Gadus albidus, Mitchill, 1818, *J. Acad. N.S. Philad.*, I (14), p. 409.

Merluccius albidus, De Kay, 1842, *N.H. New York* (*Fish.*), p. 280.

Merluccius bilinearis, Gill, 1863, *Proc. Acad. N.S. Philad.*, p. 247; Goode and Bean, 1895, *Ocean. Ichth.*, p. 386, fig. 330; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (3), p. 2530; Bigelow and Welsh, 1925, *Bull. U.S. Bur. Fish.*, XL (1), p. 386, figs. 194–195; Hildebrand and Schroeder, 1928, *Bull. U.S. Bur. Fish.*, XLIII (1), p. 162, fig. 85; Belloc, 1929, *Rév. Trav. Pêches Mar.*, II, p. 165, fig.

Depth of body 5 to 6 in the length, length of head 3 (young) to nearly 4. Snout $1\frac{1}{2}$ times to about twice as long as eye, diameter of which is $4\frac{3}{4}$ (young) to $6\frac{1}{2}$ in length of head; interorbital width about 4. Maxillary extending to below hinder part of eye, length about $\frac{1}{2}$ that of head. 10 to 14 (15) gill-rakers on lower part of anterior arch. 100 to 110 scales in a longitudinal series below lateral line. Dorsal 12–13, 36–41; anal 37–40. Pectoral with 13 or 14 rays, extending about to vent, or sometimes a little beyond, length $1\frac{1}{3}$ to $1\frac{1}{2}$ in that of head. Pelvic extending $\frac{3}{5}$ to $\frac{2}{3}$ of the distance from its base to the vent, length $1\frac{3}{4}$ to nearly twice in that of head; insertion of pelvic equidistant from origin of anal and tip of lower jaw or a little nearer the former.

Hab. Coasts of New England and northwards; southwards in deep water to the Bahamas.

Described from 8 specimens, 162–520 mm. in total length.[1]

Readily distinguished from the European species by the greater number of gill-rakers, rather larger scales, higher number of rays in the first dorsal fin, and the longer pectoral fin. It is very close to *M. hubbsi*, but has a longer pectoral fin and there are other minor differences.

Merluccius capensis, Castelnau.

Merluccius capensis, Castelnau, 1861, *Mem. Poiss. Afr. austr.*, p. 68; Regan, 1906, *Ann. Natal Mus.*, I, p. 4; Barnard, 1925, *Ann. S. Afric. Mus.*, XXI, p. 320, pl. xii, fig. 5; Norman, 1935, *Discovery Reports*, XII, p. 48.

Depth of body about 6 in the length, length of head $3\frac{1}{5}$ (young) to $3\frac{3}{5}$. Snout $1\frac{1}{2}$ times to more than twice as long as eye, diameter of which is $4\frac{1}{4}$ (young) to $6\frac{1}{2}$ in length of head; interorbital width $3\frac{3}{5}$ to nearly 4. Maxillary extending to below posterior edge of pupil or beyond, length less than $\frac{1}{2}$ that of head. 13 or 14 gill-rakers on lower part of anterior arch. 130 to 140 scales in a longitudinal series below lateral line. Dorsal 10–11, 35–40; anal 37–40. Pectoral with about 14 rays, extending to beyond the origin of the anal, length $1\frac{1}{3}$ to $1\frac{2}{3}$ in that of head. Pelvic extending $\frac{2}{3}$ to $\frac{5}{6}$ of the distance from its base to the vent, length $1\frac{2}{3}$ to $2\frac{1}{5}$ in that of head; insertion of pelvic nearer to origin of anal than to tip of lower jaw.

Hab. South Africa, from Angola to Natal.

Described from 17 specimens, 160–860 mm. in total length.

Merluccius australis (Hutton).

Gadus australis, Hutton, 1872, *Fish. N. Zealand*, pp. 45, 115, pl. vii, fig. 72.

Merluccius gayi, Günther, 1880, *Shore Fish. 'Challenger'*, p. 22; Waite, 1911, *Rec. Canterbury Mus.*, I, p. 182, pl. xxx, fig. 2; Phillipps, 1927, *N.Z. Mar. Dept. Fish. Bull.*, I, p. 23.

[1] I am greatly indebted to Dr V. Vladykov, of the Biological Board of Canada, for his kindness in obtaining 6 specimens of this species for the British Museum.

Depth of body 5 to 6 in the length, length of head $3\frac{1}{2}$ to $3\frac{3}{4}$. Snout more than twice as long as eye, diameter of which is 6 to $7\frac{1}{2}$ in length of head; interorbital width $3\frac{2}{3}$ to nearly 4. Maxillary extending to below hinder edge of pupil (posterior edge of eye in adults), length about $\frac{1}{2}$ that of head. 10 gill-rakers on lower part of anterior arch. 155 to 165 scales in a longitudinal series below lateral line. Dorsal 11, 36–43; anal 36–42. Pectoral with 13 rays, extending to vent or beyond, length $1\frac{2}{5}$ to $1\frac{2}{3}$ in that of head. Pelvic extending $\frac{3}{5}$ to $\frac{2}{3}$ of the distance from its base to the vent, length $2\frac{1}{6}$ to $2\frac{1}{3}$ in that of head; insertion of pelvic nearer to origin of anal than to tip of lower jaw.

Hab. New Zealand; Straits of Magellan.

Described from 3 specimens, 340–435 mm. in total length.

This species is readily distinguished from the other members of the genus by the smaller scales. I am unable to detect any important differences between the specimen collected by the 'Challenger' in the Messier Channel (Magellan) and those from New Zealand.

Genus Macruronus, Günther

Macruronus, Günther, 1873, *Zool. Record*, for 1871, p. 103; Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 157. Type *Coryphaenoides novae-zelandiae*, Hector.

The firm attachment of the first vertebra to the skull, and the separate frontal bones, with ridges diverging from the occipital crest and bordering a large triangular depression, place this genus in the family Merlucciidae. It differs from *Merluccius* in the tapering tail without caudal fin.

Macruronus magellanicus, Lönnberg. "Merluza de cola."

Macruronus novae-zealandiae (*non* Hector), Günther, 1880, *Shore Fish.* '*Challenger*', p. 22.
Macruronus magellanicus, Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 15, fig. 2.
Macruronus argentinae, Lahille, 1915, *Anal. Mus. Nac. B. Aires*, xxvi, p. 22, pl. v, text-fig. 1.

St. WS 77. 12. iii. 27. 51° 01′ S, 66° 31′ 30″ W. Commercial otter trawl, 110–113 m.: 1 specimen, 450 mm.

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 4 specimens, 450–615 mm.

St. WS 91. 8. iv. 27. 52° 53′ 45″ S, 64° 37′ 30″ W. Commercial otter trawl, 191–205 m.: 3 specimens, 430–480 mm.

St. WS 92. 8. iv. 27. 51° 58′ 30″ S, 65° 01′ W. Commercial otter trawl, 145–143 m.: 3 specimens, 530–635 mm.

St. WS 216. 1. vi. 28. 47° 37′ S, 60° 50′ W. Commercial otter trawl, 219–133 m.: 1 specimen, 440 mm.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 01′ 51″ W. Commercial otter trawl with net (7 mm. mesh) attached, 67–65 m.: 18 specimens, 165–230 mm.

St. WS 811. 12. i. 32. 51° 24′ 30″ S, 67° 53′ W. Commercial otter trawl, 96–98 m.: 6 specimens, 680–770 mm.

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 191–202 m.: 5 specimens, 680–840 mm.

St. WS 818. 17. i. 32. 52° 31′ 15″ S, 63° 25′ W. Commercial otter trawl, 272–278 m.: 1 specimen, 910 mm.

St. WS 853. 21. iii. 32. 44° 39′ 45″ S, 64° 13′ 30″ W. Commercial otter trawl, 90 m.: 3 specimens, 198–210 mm.

Length of head $4\frac{3}{4}$ (young) to 6 in the total length. Snout as long as or a little shorter (a little longer in large examples) than eye, diameter of which is $3\frac{1}{5}$ (young) to 4 in length of head; interorbital width about 5. Maxillary extending to below posterior edge of pupil; lower jaw projecting, length about $1\frac{1}{2}$ in that of head; teeth in lower jaw stronger than those in upper, 7 to 9 on each side; vomerine teeth present. Gill-rakers slender, the longest about $\frac{1}{2}$ as long as eye, 22 to 25 on lower part of anterior arch. First dorsal with 12 rays, narrowly separated from the second, which has about 98 rays. Anal with about 95 rays, its origin $1\frac{1}{4}$ to $1\frac{1}{2}$ times as distant from end of tail as from tip of snout. Pectoral with 17 to 19 rays, length $1\frac{1}{2}$ to $1\frac{2}{3}$ in that of head. Pelvic with 8 rays, length $1\frac{4}{5}$ to twice in that of head.

Hab. Coasts of Argentina, northwards to Buenos Aires; Patagonian-Falklands region; Straits of Magellan.

This species is very close to *M. novae-zelandiae* (Hector), from New Zealand and Tasmania,[1] but the latter has a distinctly larger eye, which is $3\frac{1}{4}$ (young) to $3\frac{3}{5}$ in length of head. In addition, the interorbital width is $4\frac{2}{3}$ to $4\frac{3}{4}$, the lower jaw $1\frac{3}{5}$ to nearly $1\frac{2}{3}$ in length of head, the maxillary extends to below the middle of the pupil, and the length of the pectoral is $1\frac{1}{3}$ to about $1\frac{1}{2}$ in that of head.

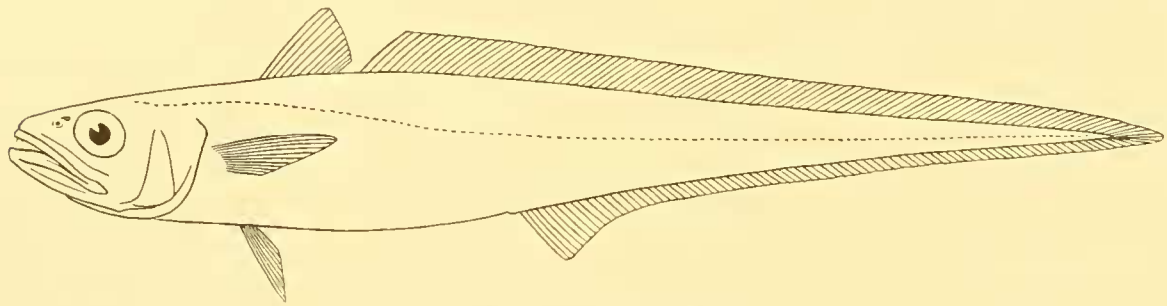

Fig. 21. *Macruronus magellanicus*. $\times\frac{1}{3}$.

Mr E. R. Gunther notes that in life this fish is a pale lustrous blue on the sides, becoming more intense on the back where the tones are sapphire and turquoise, and silvery white beneath.

GADIDAE

Key to the genera of southern South America

I. Three dorsal and two anal fins ... ... *Micromesistius*.

II. Two dorsal and one anal fin.

A. Pelvic fin with flat base and 4 to 9 rays, never much longer than head.

1. Teeth in villiform bands, those of outer row not enlarged.

a. Vomerine teeth present ... ... *Salilota*.

b. No vomerine teeth ... ... *Physiculus*.

2. Teeth in villiform bands, those of the outer row in both jaws enlarged; no vomerine teeth ... ... *Lotella*.

[1] A good description of this species has been given by Waite (1911, *Rec. Canterbury Mus.*, I, p. 180, pl. xxx, fig. 1).

B. Pelvic fin reduced to a bifid filament, with or without some other rudimentary rays.
1. First dorsal with 8 to 10 rays; pelvic much longer than head ... *Urophycis.*
2. First dorsal with 5 or 6 rays; pelvic usually shorter than head ... *Laemonema.*

Micromesistius australis, sp.n.

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 4 specimens, 445–510 mm. (holotype, 445 mm.).

St. WS 99. 19. iv. 27. 49° 42′ S, 59° 14′ 30″ W. Commercial otter trawl, 251–255 m.: 5 specimens, 395–440 mm.

St. WS 216. 1. vi. 28. 47° 37′ S, 60° 50′ W. Commercial otter trawl, 219–133 m.: 1 specimen, 165 mm.

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 1 specimen, 435 mm.

St. WS 816. 14. i. 32. 52° 09′ 45″ S, 64° 56′ W. Commercial otter trawl, 150 m.: 1 specimen, 435 mm.

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 191–238 m.: 9 specimens, 273–455 mm.

St. WS 818. 17. i. 32. 52° 31′ 15″ S, 63° 25′ W. Commercial otter trawl, 272–284 m.: 10 specimens, 280–485 mm.

St. WS 824. 19. i. 32. 52° 29′ 15″ S, 58° 27′ 15″ W. Net (7 mm. mesh) attached to back of trawl, 146–137 m.: 1 specimen, 85 mm.

St. WS 850. 11. ii. 32. 51° 18′ 45″ S, 63° 30′ 15″ W. Net (7 mm. mesh) attached to back of trawl, 157–166 m.: 1 specimen, 70 mm.

Related to *Micromesistius poutassou.* Depth of body $6\frac{1}{2}$ to $7\frac{1}{2}$ in the length, length of head 4 (young) to $4\frac{1}{2}$. Snout a little longer than eye, diameter of which is $3\frac{3}{4}$ to 4 in length of head and greater than interorbital width. Maxillary extending to below anterior part of eye, length $2\frac{1}{3}$ to $2\frac{1}{2}$ in that of head; lower jaw more or less strongly

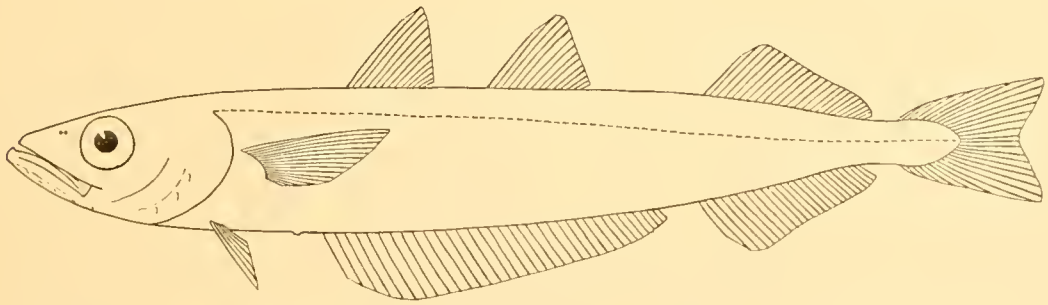

Fig. 22. *Micromesistius australis.* Holotype. $\times\frac{1}{3}$.

projecting; teeth rather more feeble than in *M. poutassou.* 35 to 39 gill-rakers on lower part of anterior arch. Dorsal 11–13, 10–14, 22–26; interval between first and second dorsal a little less than base of former, that between second and third $1\frac{1}{3}$ to $1\frac{2}{3}$ times base of second. Anal 35–38, 21–25. Pectoral with about 20 rays, length $1\frac{1}{3}$ to $1\frac{3}{5}$ in that of head. Pelvics 6-rayed.

Hab. Patagonian-Falklands region.

This species is very close to *M. poutassou* (Risso), from the Mediterranean and adjacent parts of the Atlantic, but may be at once recognized by the more numerous

gill-rakers (35 to 39 instead of about 25). The body is more slender, the eye (usually) rather larger, the teeth feebler, and the pectoral fin apparently longer.

I have followed Gill in regarding *Gadus poutassou* as the type of a genus related to *Pollachius* and *Boreogadus*, and distinguished from them by the dentition, the anterior position of the vent, the long first anal fin and the short second dorsal fin. A glance at the various species is sufficient to show that the old composite genus, *Gadus*, of Günther and other writers cannot be maintained, but a thorough revision of the whole family will be necessary before the limits of the various groups into which it has been subdivided can be ascertained.

Genus Salilota, Günther

1887, *Deep-Sea Fish.* '*Challenger*', p. 95. Type *Haloporphyrus australis*, Günther.

This genus is scarcely separable from *Physiculus*, Kaup, the only important difference being the presence of a patch of vomerine teeth in *Salilota*. It is also closely related to *Lepidion*, Swainson [= *Haloporphyrus*, Günther].

Salilota australis (Günther).

Haloporphyrus australis, Günther, 1878, *Ann. Mag. Nat. Hist.* (5) II, p. 19.

Salilota australis, Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 95, pl. xvii, fig. B; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 625; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 37; Delfin, 1901, *Cat. Peces Chile*, p. 99; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 14; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 425.

? *Salilota bovei*, Perugia, 1891, *t.c.*, p. 626.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Island. From 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock. Large otter trawl, 105–115 m.: 3 specimens, 65–78 mm.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 3 specimens, 155–380 mm.

St. WS 75. 10. iii. 27. 51° 01′ 30″ S, 60° 31′ W. Commercial otter trawl, 72 m.: 32 specimens, 48–74 mm.

St. WS 78. 13. iii. 27. 51° 01′ S, 68° 04′ 30″ W. Commercial otter trawl, 132–131 m.: 1 specimen, 43 mm.

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 7 specimens, 180–348 mm.

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 13 specimens, 150–435 mm.

St. WS 84. 24. iii. 27. 7½ miles S 9° W of Sea Lion Island, East Falkland Island. Commercial otter trawl, 75–74 m.: 5 specimens, 54–70 mm.

St. WS 89. 7. iv. 27. 9 miles N 21° E of Arenas Point Light, Tierra del Fuego. Commercial otter trawl, 23–21 m.: 2 specimens, 37, 78 mm.

St. WS 214. 31. v. 28. 48° 25′ S, 60° 40′ W. Net (7 mm. mesh) attached to back of trawl, 208–219 m.: 3 specimens, 90–188 mm.

St. WS 219. 3. vi. 28. 47° 06′ S, 62° 12′ W. Net (7 mm. mesh) attached to back of trawl, 116–114 m.: 2 specimens, 65, 85 mm.

St. WS 222. 8. vi. 28. 48° 23′ S, 65° 00′ W. Nets attached to back of trawl, 100–106 m.: 2 specimens, 72, 87 mm.

St. WS 234. 5. vii. 28. 48° 52′ S, 60° 25′ W. Net (7 mm. mesh) attached to back of trawl, 195–207 m.: 1 specimen, 165 mm.

St. WS 244. 18. vii. 28. 52° 00′ S, 62° 40′ W. Commercial otter trawl, 253–247 m.: 1 specimen, 220 mm.

St. WS 586. 8. v. 31. 48° 27′ 30″ S, 74° 23′ 30″ W. Hand line, 22 m.: 1 specimen, 225 mm.

St. WS 764. 17. x. 31. 44° 38′ 15″ S, 61° 58′ 30″ W. Commercial otter trawl, 110–104 m.: 2 specimens, 124, 126 mm.

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 191–202 m.: 2 specimens, 610, 625 mm.

Depth of body 4 to 5 in the length, length of head $3\frac{4}{5}$ to $4\frac{1}{3}$. Snout about as long as eye (shorter in young and a little longer in large specimens), diameter of which is 3 (young) to 5 in length of head and 1 to $1\frac{1}{4}$ in the interorbital width. Maxillary extending to below middle or posterior part of eye; lower jaw shorter than upper; barbel $\frac{1}{2}$ to $\frac{3}{4}$ diameter of eye. 15 to 16 gill-rakers on lower part of anterior arch. 15 to 19 rows of scales from first dorsal fin to lateral line. A circular, unscaled, pigmented area between

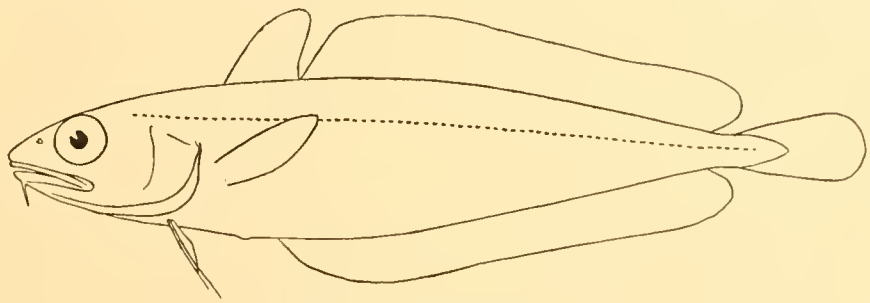

Fig. 23. *Salilota australis*. ×$\frac{1}{2}$.

the bases of the pelvic fins.[1] Dorsal 9–11, 50–57; anal 50–57. Pectoral with 23–25 rays, length $1\frac{1}{2}$ to $1\frac{3}{4}$ in that of head. Pelvics 7- or 8-rayed.

Hab. Patagonian-Falklands region; Straits of Magellan; southern Chile.

In addition to the above, there are 6 specimens (145–470 mm.) in the British Museum collection, including the types of the species and one of the types of *S. bovei*.

The specimens described above present some variation in the shape of the head, length of the pelvic fins, size of the mouth, coloration, etc., but I am unable to recognize more than one species.

Physiculus marginatus (Günther).

Lotella marginata, Günther, 1878, *Ann. Mag. Nat. Hist.* (5) II, p. 19; Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 86, pl. xiv, fig. A; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 425.

St. WS 75. 10. iii. 27. 51° 01′ 30″ S, 60° 31′ W. Commercial otter trawl, 72 m.: 18 specimens, 50–73 mm.

St. WS 817. 14. i. 32. 52° 23′ S, 64° 19′ W. Commercial otter trawl, 202–238 m.: 1 specimen, 180 mm.

St. WS 820. 18. i. 32. 52° 53′ 15″ S, 61° 51′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 351–367 m.: 1 specimen, 160 mm.

St. WS 821. 18. i. 32. 52° 55′ 45″ S, 60° 55′ W. Net (7 mm. mesh) attached to back of trawl, 461–468 m.: 2 specimens, 163, 170 mm.

[1] This is associated with a luminous gland. See Hickling, 1925, *J. Mar. Biol. Ass.*, XIII, p. 914, 4 pls. 7 text-figs.; 1926, *ibid.*, XIV, p. 495, 2 text-figs.; 1931, *ibid.*, XVII, p. 853, 4 pls. 4 text-figures.

Depth of body 5 to $5\frac{2}{3}$ in the length, length of head 4 to $4\frac{1}{2}$. Snout shorter than eye, diameter of which is $2\frac{1}{2}$ to $2\frac{3}{4}$ in length of head and about twice interorbital width. Maxillary extending to below middle of eye; lower jaw a little shorter than upper; barbel $\frac{1}{3}$ to nearly $\frac{1}{2}$ diameter of eye; teeth in villiform bands, those of the outer series scarcely larger than the remainder. 15 to 18 gill-rakers on lower part of anterior arch. Dorsal 7–8, 60–66; anal 56–63. Pectoral with 24 or 25 rays, length about $1\frac{1}{2}$ in that of head. Pelvics 5-rayed; longest ray nearly as long as head. Median fins with dark margins.

Hab. Patagonian-Falklands region; Straits of Magellan; southern Chile.

In addition to the above, there are 4 specimens (130–225 mm.) in the British Museum collection, including the types of the species.

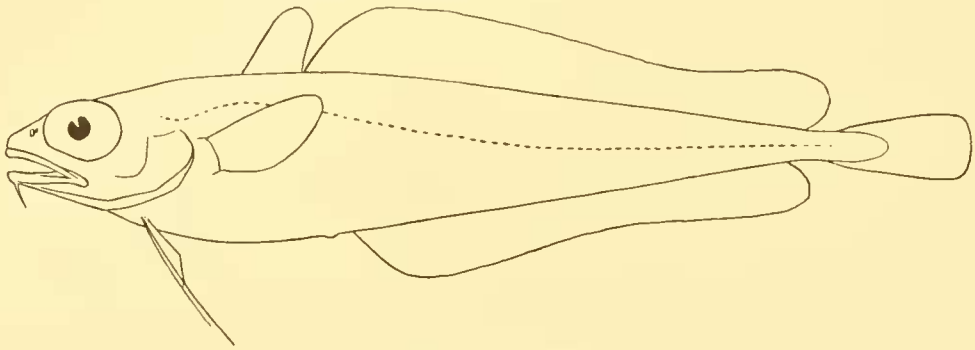

Fig. 24. *Physiculus marginatus.* $\times\frac{3}{4}$.

A Synopsis of the Species of *Physiculus*

I have been led to examine all the specimens of this genus in the British Museum collection, but, as several species are not represented, it has proved impossible to draw up a satisfactory key for their identification.

Provisional key to the species

I. Barbel present.

A. Second dorsal with 42 to 48 rays; anal with 40 to 53 rays; body stout, the depth $3\frac{2}{3}$ to $4\frac{1}{3}$ in the length ... ... *bachus, barbatus.*

B. Second dorsal with 49 to 73 rays; anal with 54 to 74 rays; body usually more slender, the depth $4\frac{1}{4}$ to 6 in the length.

1. 15 to 20 gill-rakers on lower part of anterior arch.

a. Eye $2\frac{1}{2}$ to $2\frac{3}{4}$ in head; about 13 scales in an oblique series from first dorsal to lateral line; median fins with dark margins ... ... *marginatus.*

b. Eye $3\frac{1}{4}$ in head; about 7 scales in an oblique series from first dorsal to lateral line ... ... *rastrelliger.*

2. 7 to 14 gill-rakers (including rudiments) on lower part of anterior arch.

a. Eye 3 in head, which is $4\frac{1}{4}$ to $4\frac{3}{4}$ in length of body; maxillary to below posterior margin of pupil... ... ... *capensis.*

b. Eye $3\frac{1}{2}$ to 5 in head, which is $3\frac{1}{2}$ to $4\frac{1}{2}$ in length of body.

(i) Maxillary to below posterior part of eye or beyond.

α. Eye $3\frac{1}{2}$ in head; pelvics much shorter than head ... ... *fulvus.*

β. Eye $3\frac{2}{3}$ to $3\frac{3}{4}$ in head; pelvics longer than head ... ... *nematopus.*

γ. Eye $4\frac{1}{2}$ to 5 in head; pelvics a little shorter than head *argyropastus, nigrescens, grinnelli.*

(ii) Maxillary not or scarcely extending to beyond middle of eye.

α. Pelvics shorter than head.

* Second dorsal with 57 rays; anal with 55 rays; first ray of dorsal prolonged; pectoral about $1\frac{4}{5}$ in head ... ... *roseus.*

** Second dorsal with 60 to 72 rays; anal with 60 to 74 rays; first ray of dorsal not prolonged; pectoral $1\frac{2}{5}$ to $1\frac{3}{4}$ in head.

† Pelvics 5- to 7-rayed, length $1\frac{3}{5}$ to 2 in head, which is $3\frac{1}{2}$ to $4\frac{1}{5}$ in length of body.

‡ Eye $3\frac{2}{3}$ to 4 in head; first dorsal with 7 rays; pelvics 5-rayed *dalwigkii.*

‡‡ Eye $4\frac{1}{4}$ to 5 in head; first dorsal with 9 or 10 rays; pelvics 7-rayed ... ... *kaupi, japonicus.*

†† Pelvics 3- (or 4-) rayed, length about $1\frac{1}{5}$ in head, which is about $4\frac{1}{2}$ in length of body ... ... *peregrinus.*

β. Pelvics longer than head ... ... *longifilis.*

II. No barbel; second dorsal with 64 rays ... ... *edelmanni.*

Physiculus natalensis, Gilchrist (1922, *Fish. Mar. Surv. S. Afr.* II, 1921, Spec. Rep. III, p. 63), has been very briefly described and is not included in the above key. It appears to be most nearly related to *P. kaupi* and *P. japonicus.*

Genus Physiculus, Kaup

Physiculus, Kaup, 1858, *Arch. Naturgesch.*, XXIV (1), p. 88. Type *Physiculus dalwigkii*, Kaup.
Pseudophycis, Günther, 1862, *Cat. Fish.*, IV, p. 350. Type *Lota breviuscula*, Richardson.
Leptophycis, Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 182. Type *Leptophycis filifer*, Garman.

Physiculus bachus (Schneider).

Enchelyopus bachus, (Forster) Schneider, 1801, in Bloch, *Syst. Ichth.*, p. 53.
Lota breviuscula, Richardson, 1846, *Zool. 'Erebus' and 'Terror'*, Fish., p. 61, pl. xxxviii, fig. 1; Günther, 1862, *Cat. Fish.*, IV, p. 350.
Lotella bacchus, Günther, 1862, *t.c.*, p. 347; Hutton, 1872, *Fish. N. Zealand*, p. 46.
Physiculus bachus, Waite, 1911, *Rec. Canterbury Mus.*, I, p. 183, pl. xxxi, fig. 1; Phillipps, 1927, *N. Zealand Mar. Dept. Fish. Bull.*, I, p. 23; McCulloch, 1929, *Mem. Austral. Mus.*, V, p. 129.

Hab. New South Wales; South Australia; New Zealand.

In the British Museum 13 specimens, 92–550 mm. in total length.

Physiculus barbatus (Günther).

Pseudophycis barbatus, Günther, 1863, *Ann. Mag. Nat. Hist.* (3) XI, p. 116.
Physiculus palmatus, Klunzinger, 1872, *Arch. Naturgesch.*, XXXVIII (1), p. 38.
Lotella grandis, Ramsay, 1881, *Proc. Linn. Soc. N.S. Wales*, V, p. 462.
Physiculus barbatus, McCulloch, 1929, *Mem. Austral. Mus.*, V, p. 128.

Hab. South-eastern Australia and Tasmania; New Zealand.

In the British Museum 3 specimens, 260–430 mm. in total length, including the type of the species, a stuffed specimen, 430 mm. long, from Victoria.

Perhaps identical with the preceding species.

Physiculus marginatus (Günther).

For synonymy, etc. see pp. 53–54.

Physiculus rastrelliger, Gilbert.

1891, *Proc. U.S. Nat. Mus.*, XIII, p. 113; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (3), p. 2549; Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 189, pl. lxxxii, fig. 2.
? *Leptophycis filifer*, Garman, 1899, *t.c.*, p. 182, pl. xli, fig. 2.

Hab. Pacific coast of America from Lower California to Colombia.

In the British Museum a single specimen, 110 mm. in total length.

Physiculus capensis, Gilchrist.

1922, *Fish. Mar. Surv. S. Afr.*, II, 1921, Spec. Rep. III, p. 62; Barnard, 1925, *Ann. S. Afric. Mus.*, XXI, p. 326.

Hab. South Africa.

In the British Museum a single specimen, 105 mm. in total length.

Physiculus fulvus, Bean.

1885, *Proc. U.S. Nat. Mus.*, VII (1884), p. 240; Goode and Bean, 1895, *Ocean. Ichth.*, p. 366, fig. 319; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (3), p. 2547, fig. 896.

Hab. Caribbean Sea and northwards in the Gulf Stream.

Physiculus nematopus, Gilbert.

1891, *Proc. U.S. Nat. Mus.*, XIII, p. 114; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (3), p. 2548.
? *Physiculus longipes*, Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 188, pl. xlii, fig. 2.

Hab. Coast of southern California; Bay of Panama (?).

In the British Museum a single specimen, 132 mm. in total length.

Physiculus argyropastus, Alcock.

1893, *J. Asiat. Soc. Bengal*, LXII (2), p. 180, pl. ix, fig. 2; *Illust. Zool.* '*Investigator*', Fishes, pl. xxii, fig. 1; Alcock, 1899, *Cat. Indian Deep-Sea Fish.*, p. 77.

Hab. Indian seas.

In the British Museum 12 specimens, 55–225 mm. in total length, including a paratype of the species.

Physiculus nigrescens, Radcliffe.

1912, *Proc. U.S. Nat. Mus.*, XLIII, p. 105, pl. xxii, fig. 1.

Hab. Philippines.

This species may be identical with *P. peregrinus*.

Physiculus grinnelli, Jordan and Jordan.

1922, *Mem. Carnegie Mus.*, X, p. 22, pl. i, fig. 3.

Hab. Hawaiian Islands.

Physiculus roseus, Alcock.

1891, *Ann. Mag. Nat. Hist.* (6) VIII, p. 28; *Illust. Zool.* '*Investigator*', Fishes, pl. xi, fig. 2; Alcock, 1899, *Cat. Indian Deep-Sea Fish.*, p. 76.

Hab. Andaman Sea.

In the British Museum a single specimen (paratype), 165 mm. in total length.

Physiculus dalwigkii, Kaup.

1858, *Arch. Naturgesch.*, XXIV (1), p. 88; Günther, 1862, *Cat. Fish.*, IV, p. 348; Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 88; Vaillant, 1888, *Expéd. Sci.* '*Travailleur*' *et* '*Talisman*', Poiss., p. 290, pl. xxv, fig. 3.

Hab. Madeira; off Soudan.

In the British Museum 3 specimens, 215–240 mm. in total length.

Physiculus kaupi, Poey.

1865, *Repert. Fis.-Nat. Cuba*, I, p. 186, pl. iv, fig. 1; Goode and Bean, 1895, *Ocean. Ichth.*, p. 366; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (3), p. 2548.

Hab. Deep waters of the Atlantic.

In the British Museum 2 specimens, 230–265 mm. in total length.[1]

Physiculus japonicus, Hilgendorf.

1879, *SitzBer. naturf. Freunde Berlin*, p. 80; Franz, 1910, *Abh. Bayer. Akad. Wiss.*, Suppl. IV, Abh. 1, pp. 27, 111, pl. v, fig. 20, pl. x, figs. 10, 11; Jordan and Hubbs, 1925, *Mem. Carnegie Mus.*, X, p. 326.

Physiculus kaupi (part), Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 88, pl. xvii, fig. A.

Physiculus dalwigkii, Steindachner and Döderlein, 1887, *Denkschr. Akad. Wiss. Wien.*, LIII, p. 279.

Hab. Japan.

In the British Museum 3 specimens, 280–375 mm. in total length.

Physiculus peregrinus (Günther).

Pseudophycis peregrinus, Günther, 1871, *Proc. Zool. Soc.*, p. 669.

Physiculus peregrinus, Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 88; Weber and Beaufort, 1929, *Fish. Indo-Austral. Arch.*, V, p. 9.

Hab. Philippines.

In the British Museum a single specimen, 135 mm. in total length—type of the species.

Physiculus longifilis, Weber.

1913, *Fische* '*Siboga*'*-Exped.*, p. 178, pl. v, fig. 6; Weber and Beaufort, 1929, *Fish. Indo-Austral. Arch.*, V, p. 10, fig. 3.

Hab. Flores Sea.

Physiculus edelmanni, Brauer.

1906, *Tiefsee-Fische* '*Valdivia*', p. 274, pl. xii, fig. 6.

Hab. Deep water off the coast of East Africa.

Brauer had 3 specimens of this species, 150–223 mm. in total length, none of which showed any trace of a barbel.

[1] The tail has been broken in both specimens.

Genus Lotella, Kaup

Lotella, Kaup, 1858, *Arch. Naturgesch.*, XXIV (1), p. 88. Type *Lota phycis*, Schlegel.

This genus is very close to *Physiculus*, but is readily distinguished by the outer series of enlarged teeth in each jaw. In addition, the scales are smaller and the pelvic fins have rather broader bases.

Lotella fernandeziana, Rendahl.

Lotella rhacinus (*non* Forster), Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 325; Delfin, 1901, *Cat. Peces Chile*, p. 100.
Lotella phycis (*non* Schlegel), Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 208.
Lotella fernandeziana, Rendahl, 1921, *Nat. Hist. J. Fernandez and Easter Isd.*, III, p. 53.

Hab. Juan Fernandez.

The British Museum has received a fine specimen (275 mm. long) through Mr Cavendish Bentinck, collected by Dr Lengerich. This species is closely related to *L. callarias*, Günther, from Australian seas, which may prove to be identical with *L. rhacinus* (Forster), from New Zealand. Other species are *L. phycis* (Schlegel) from Japan, and *L. fuliginosa*, Günther, from an unknown locality. *L. maxillaris*, Bean, from the Gulf Stream, is probably not a member of this genus.

MURAENOLEPIDAE

Muraenolepis microps, Lönnberg.

Muraenolepis marmoratus microps, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 43.
Muraenolepis microps, Regan, 1914, *Brit. Antarct.* (*'Terra Nova'*) *Exped.* 1910, Zool., I (1), p. 1, pl. ii, fig. 2.

St. WS 82. 21. iii. 27. 54° 06′ S, 57° 46′ W. Commercial otter trawl, 140–144 m.: 1 specimen, 190 mm.

Depth of body about 5 in the length, length of head $4\frac{3}{4}$. Diameter of eye $5\frac{1}{2}$ in length of head, much less than interocular width, greater than interorbital width. Length of barbel about $\frac{1}{7}$ that of head. Length of pelvic nearly $\frac{2}{3}$ that of head. Dorsal filament longer than diameter of eye.

Hab. Burdwood Bank, south of the Falkland Islands; South Georgia; Antarctic Seas.

This species appears to belong more properly to the true Antarctic region, the fishes of which will be dealt with in a later report.

Muraenolepis orangiensis, Vaillant. "Yallich Lif" or "Yakouchlif".

1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 20, pl. iv, fig. 2.

St. WS 825. 28–29. i. 32. 50° 50′ S, 57° 15′ 15″ W. Commercial otter trawl with net attached, 135–144 m.: 1 specimen, 192 mm.

Depth of body $6\frac{2}{3}$ in the length, length of head $6\frac{1}{3}$. Diameter of eye 5 in length of head, about equal to interocular width, much greater than interorbital width. Length of barbel about $\frac{1}{5}$ that of head. Length of pelvic $\frac{5}{6}$ that of head. Dorsal filament 3 times as long as diameter of eye.

Hab. Patagonian-Falklands region; Straits of Magellan.

The type of the species from Orange Bay was only 63 mm. long. The species was not previously represented in the British Museum collection.

The known species of *Muraenolepis* may be distinguished as follows:

I. Depth of body $6\frac{2}{3}$, length of head $6\frac{1}{3}$ in that of fish; dorsal filament 3 times as long as eye ... ... *orangiensis.*

II. Depth of body 5 to 6, length of head $4\frac{1}{2}$ to $5\frac{1}{4}$ in that of fish; dorsal filament less than twice as long as eye.

A. Length of head $5\frac{1}{4}$ in that of fish; eye about 4 in head; dorsal filament as long as eye ... ... *marmoratus.*

B. Length of head $4\frac{1}{2}$ to $4\frac{3}{4}$ in that of fish; eye 5 in head; dorsal filament longer than eye ... ... *microps.*

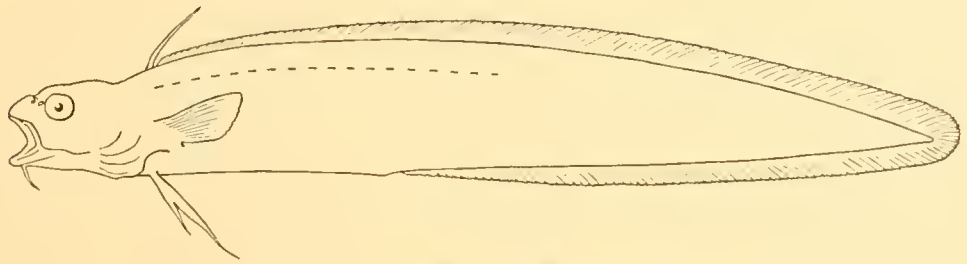

Fig. 25. *Muraenolepis orangiensis.* $\times\frac{2}{3}$.

LAMPRIDIDAE

Lampris regius (Bonnaterre).

There is a stuffed specimen, about 3 feet in length, in the Museum at Stanley, of which a photograph has been sent to me by Mr Hamilton. This fish, which was found at West Point Island, Falkland Islands, appears to be referable to this species. This is the first record of the Opah or Moon-fish from South America, but it is known from Australia and New Zealand.

CARANGIDAE

Parona signata (Jenyns).

Paropsis signatus, Jenyns, 1842, *Zool. 'Beagle'*, Fish., p. 66, pl. xiii; Günther, 1860, *Cat. Fish.*, II, p. 486; Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 77; Lütken, 1880, *Vidensk. Selsk. Skr.* (5) XII, 6, p. 104; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 614.

Parona signata, Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 39; Evermann and Kendall, 1906, *Proc. U.S. Nat. Mus.*, XXXI, p. 99; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 218; Fowler, 1927, *Proc. Acad. N.S. Philad.*, LXXVIII, p. 268; Devincenzi and Barattini, 1928, *Anal. Mus. Montevideo* (II) II (4), pl. xxiv, fig. 2.

St. WS 847. 9. ii. 32. 50° 15′ 45″ S, 67° 57′ W. Commercial otter trawl, 51–56 m.: 6 specimens, 465–600 mm.

Depth of body $2\frac{1}{5}$ to nearly $2\frac{1}{2}$ in the length, length of head $3\frac{4}{5}$ to a little more than 4. Snout as long as (young) or longer than eye, diameter of which is $3\frac{1}{2}$ (young) to $6\frac{1}{2}$ in length of head and less than interorbital width. Maxillary extending to beyond eye in

adults; lower jaw projecting; bands of very small conical teeth in both jaws, tapering to nearly a single series posteriorly. 14 or 15 long, slender gill-rakers on lower part of anterior arch. Dorsal VI–VII, I 32–39; preceded by a recumbent, anteriorly-directed spine, which is generally more or less embedded under the skin. Anal II, I 34–37. Length of pectoral $1\frac{1}{2}$ to $1\frac{3}{4}$ in that of head. Silvery, back darker; an elongate horizontal black blotch on side beneath the pectoral fin.

Hab. Coasts of southern Brazil, Uruguay and Argentina; Patagonian-Falklands region.

In addition to the above, there is a large specimen in the British Museum collection from Buenos Aires, a very small one from Rio Grande do Sul, and the type of the species (about 220 mm.) from Bahia Blanca, Northern Patagonia.

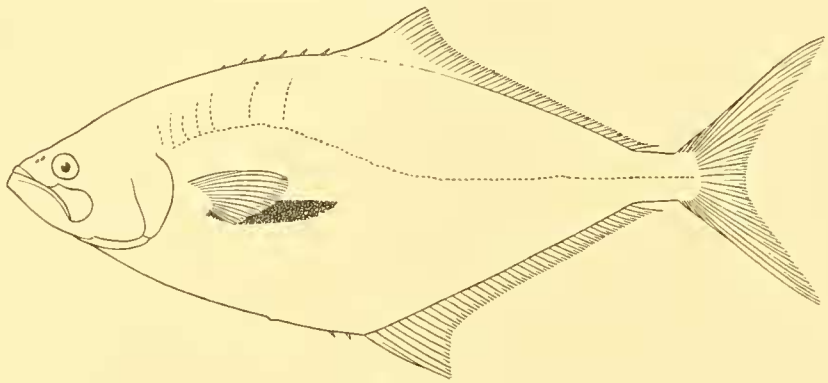

Fig. 26. *Parona signata.* $\times\frac{1}{4}$.

CHEILODACTYLIDAE

Cheilodactylus bergi, sp.n.

Chilodactylus macropterus (*non* Schneider), Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) x [xxx], p. 612; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 60; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 7; Ribeiro, 1915, *Arch. Mus. Nac. Rio Janeiro*, XVII, Chilodactylidae, p. 2, fig.; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) 1 (5), p. 227; Fowler, 1927, *Proc. Acad. N.S. Philad.*, LXXVIII, p. 272.

15. iii. 32. Port Madryn, Argentina. Hand line, 2 m.: 1 specimen, 142 mm.

Depth of body $2\frac{3}{5}$ to nearly 3 in the length, length of head $3\frac{1}{3}$ to $3\frac{3}{5}$. Snout longer than eye, diameter of which is $3\frac{3}{4}$ to 4 in length of head and about equal to interorbital width. Scales on upper surface of head not extending forward beyond a line between the nostrils. Maxillary extending to below the nostrils. 14 or 15 gill-rakers on lower part of anterior arch. 50 to 54 scales in a longitudinal series, 5 or 6 from origin of dorsal to lateral line. Dorsal XVII–XVIII 25–26; seventh spine apparently longest, its length about $\frac{1}{2}$ that of head. Anal III 14–15; second spine stronger and a little longer than third, its length about equal to diameter of eye. Pectoral with 6 simple rays, the uppermost (or sometimes the second) greatly prolonged, much longer than head, extending to above anterior soft-rays of anal. Supra-cleithrum about as broad as eye. Silvery, darker above, with some irregular and indistinct darker patches on head and body; a large diffuse dark blotch at commencement of lateral line, connected with that

of the opposite side by a broad band passing just in front of the first dorsal spine; membrane of spinous dorsal fin dusky.

Hab. Coast of South America from Rio de Janeiro southwards [to the Straits of Magellan?].

In addition to the specimen mentioned above, two others (340, 365 mm.) from off the coast of Uruguay (34° S, 50° W), presented to the British Museum by Dr Marini, have been included in the description. The smaller of these two specimens (340 mm.) has been selected as the holotype.

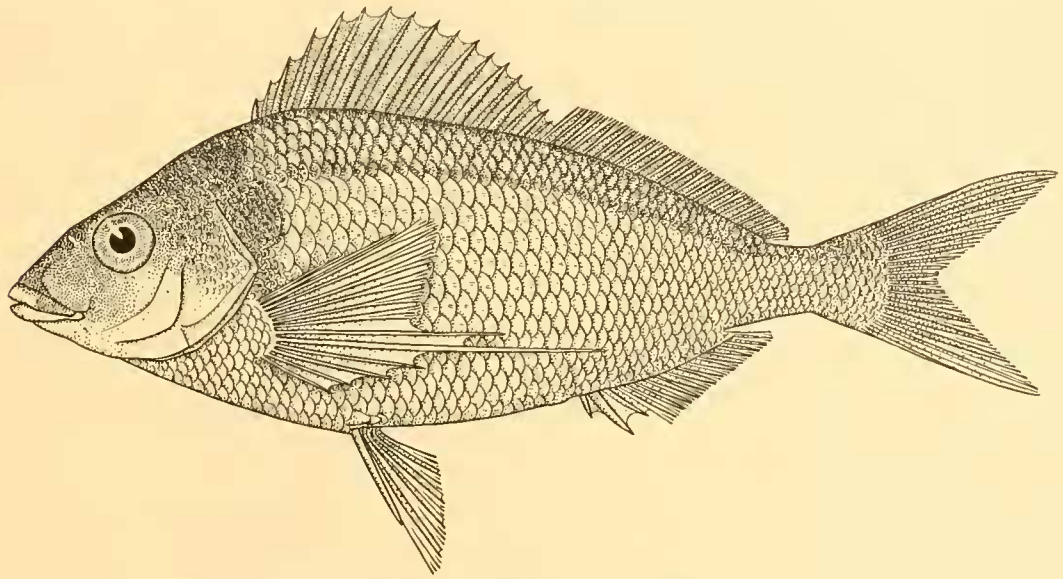

Fig. 27. *Cheilodactylus bergi.* Holotype. $\times \frac{2}{5}$.

This species is very closely related to *C. macropterus* (Schneider) from Australia and New Zealand, but may be at once recognized by the much broader supra-cleithrum. According to Gill's synopsis of the Cirrhitiform Percoids (1862, *Proc. Acad. N.S. Philad.*, p. 114) this species would fall into the genus *Dactylopagrus*,[1] but it seems doubtful whether the groups *Dactylopagrus*, *Acantholatris* and *Chirodactylus* erected by this author are worthy of more than subgeneric rank at the most.

Cheilodactylus gayi, Kner.

Cheilodactylus carmichaelis (*non* Cuvier and Valenciennes, 1830), Cuvier and Valenciennes, 1833, *H.N. Poiss.*, IX, p. 489; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 197; Valenciennes, 1850, in Cuvier, *R. Anim.*, Disciples Ed., Poiss., pl. xxxi, fig. 2.

Chilodactylus gayi, Kner, 1869, *Reise* '*Novara*', Zool., I, 5, Fische, p. 92.

Chilodactylus monodactylus (*non* Carmichael), Steindachner, 1875, *SitzBer. Akad. Wiss. Wien*, LXXI (1), p. 456; Günther, 1880, *Shore Fish.* '*Challenger*', p. 24; Delfin, 1901, *Cat. Peces Chile*, p. 70; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 205; Rendahl, 1921, *Nat. Hist. J. Fernandez and Easter Isd.*, III, p. 55.

Depth of body $2\frac{2}{3}$ to nearly 3 in the length, length of head about $3\frac{3}{5}$. Snout (measured to tip of upper lip) $1\frac{3}{4}$ times as long as eye, diameter of which is about 4 in length of

[1] Misprinted *Dactylosparus* on p. 117.

head and a little less than interorbital width. Scales on upper surface of head extending forward to a little beyond a line between the anterior nostrils. Maxillary extending to below the anterior nostril. 14 gill-rakers on lower part of anterior arch. 53 to 56 scales in a longitudinal series, 7 from origin of dorsal to lateral line. Dorsal XVII 25; seventh spine longest, its length about $\frac{1}{2}$ that of head. Anal III 12; second spine very stout and much longer than third, its length $2\frac{1}{2}$ in that of head. Pectoral with 6 simple rays, the uppermost or second prolonged, extending to above anterior part of anal, length of fin (measured from axil to tip of longest ray) $1\frac{3}{5}$ to $1\frac{2}{3}$ times that of head. Supra-cleithrum narrow, about $\frac{1}{2}$ as broad as eye. Brownish above, silvery below; scales on upper parts of body with silvery centres, giving the appearance of longitudinal stripes; an indistinct dark band on the back in front of the dorsal fin, connecting the pectoral fins; a dark patch below the eye and another on the edge of the operculum.

Hab. Juan Fernandez.

Described from 2 specimens, 360 and 370 mm. in total length, collected by the 'Challenger' Expedition.

This species, which falls into the group *Acantholatris* of Gill, is closely related to *C. monodactylus* (Carmichael) from Tristan da Cunha and Gough Island. In that species, however, the head is a little larger ($3\frac{1}{5}$ to $3\frac{1}{3}$ in length of body), the diameter of the eye is about $4\frac{1}{2}$ in length of head and $1\frac{1}{4}$ to $1\frac{1}{3}$ in the interorbital width (in adults); the maxillary extends to below the posterior nostril; there are 16 or 17 gill-rakers on the lower part of the anterior arch; there are 50 to 52 scales in a longitudinal series; the longest dorsal spine is less than $\frac{1}{2}$ the length of the head; the pectoral fin is as long as or a little longer than the head, the prolonged ray extending to above the vent or not as far; and there are 5 or 6 dark cross-bars on the upper parts of the sides.

PINGUIPEDIDAE

Parapercis chilensis, sp.n.

St. WS 742. 5. xi. 31. 38° 22′ S, 73° 41′ W. Small beam trawl, 58 m.: 3 specimens, 102–270 mm. (holotype 270 mm.).

Depth of body $4\frac{1}{4}$ to $4\frac{3}{4}$ in the length, length of head about $3\frac{1}{4}$. Snout as long as or a little longer than eye, diameter of which is $3\frac{3}{4}$ to $4\frac{1}{2}$ in length of head and $1\frac{1}{2}$ times to twice the interorbital width. Maxillary extending to or nearly to the anterior margin of the eye; teeth in broad villiform bands in both jaws, those of the outer series enlarged but not canine-like; vomer and palatines toothless. Upper surface of head, cheeks and opercles scaled; margin of praeoperculum smooth. 9 short gill-rakers on lower part of anterior arch. Scales ciliated; 70 to 75 in a longitudinal series, 11 or 12 between dorsal spines and lateral line. Dorsal IV 27–28; spines increasing in size to the last, which is about as long as eye and $\frac{3}{5}$ as long as the first soft-ray. Anal 22–23. Pectoral $\frac{3}{4}$ to $\frac{4}{5}$ as long as head. Pelvics extending to or nearly to origin of anal. Caudal subtruncate; caudal peduncle about as deep as long. Brownish, with some indistinct dark markings on the body which tend to form irregular cross-bars; dorsal and caudal fins dusky; rays of the anal tipped with yellowish-white; pectoral pale, with a dark crescentic spot at its base.

Hab. Mocha Island, Chile.

This species appears to be most nearly related to *P. gilliesii* (Hutton) from New Zealand, but has one more spine in the dorsal fin, a greater number of dorsal and anal rays, smaller scales, and a broader interorbital region. The absence of teeth on the vomer distinguishes it from this and from all other species of *Parapercis*, but I am not inclined to erect a new genus for its reception on this account. McCulloch (1914, *Biol. Res.* '*Endeavour*', II, p. 154) has shown that the palatine teeth are sometimes absent and sometimes present in certain species of *Parapercis*, and in *P. gilliesii* the vomerine teeth are only 3 or 4 in number.

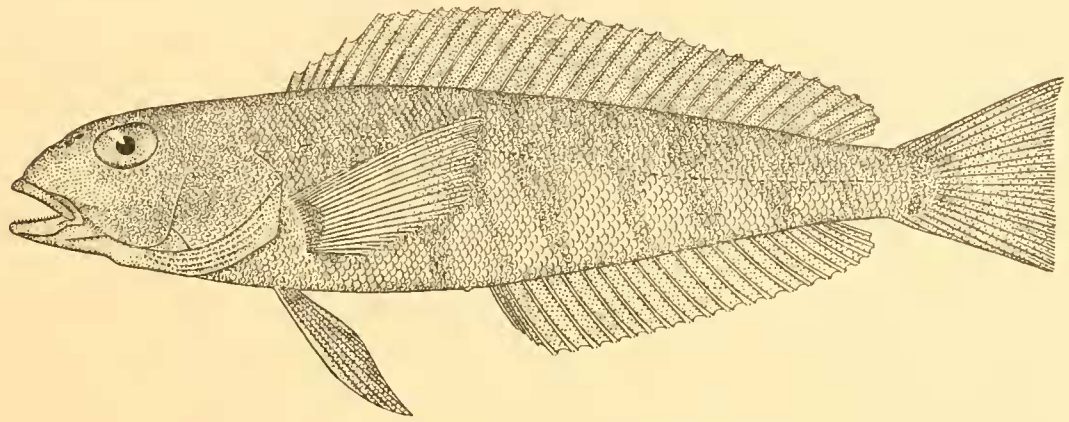

Fig. 28. *Parapercis chilensis*. Holotype. × ½.

BOVICHTHYIDAE

Cottoperca gobio (Günther). "Yakouroum."

? *Batrachus trigloides*, Schneider [*ex* Forster MS.], 1801, in Bloch, *Syst. Ichth.*, p. 44.

? *Callionymus trigloides*, Forster, 1844, *Descript. Anim.*, p. 358.

Aphritis gobio, Günther, 1861, *Ann. Mag. Nat. Hist.* (3) VII, p. 88; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 469; Günther, 1880, *Shore Fish.* '*Challenger*', p. 21, pl. ix; Günther, 1881, *Proc. Zool. Soc.*, p. 20; Perugia, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 615.

Cottoperca rosenbergii, Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 67, pl. v, fig. 1; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 28, pl. iv, fig. 1.

Cottoperca gobio, Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 13, pl. i, fig. 16, pl. ii, figs. 18–20; Berg, 1899, *Comun. Mus. Nac. B. Aires*, I, p. 173; Delfin, 1901, *Cat. Peces Chile*, p. 84; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 253, pl. iv, fig. 3; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 264.

Pseudaphritis gobio, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), pp. 8, 16; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 10; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 423.

Cottoperca macrocephala, Roule and Despax, 1911, *Bull. Mus. Paris*, XVII, p. 277; Roule, Angel and Despax, 1913, *Deux. Expéd. Antarct. Franç.* (1908–1910), Poiss., p. 7, pl. i, fig. 2, pl. iii, fig. 4.

Cottoperca macrophthalma, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 253, pl. iv, fig. 2, pl. v, fig. 2.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 3 specimens, 190–270 mm.

St. WS 77. 12. iii. 27. 51° 01′ S, 66° 31′ 30″ W. Commercial otter trawl, 110–113 m.: 2 specimens, 230, 235 mm.

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 4 specimens, 195–330 mm.

St. WS 83. 24. iii. 27. 14 miles S 64° W of George Island, East Falkland Islands. Commercial otter trawl, 137–129 m.: 22 specimens, 120–305 mm.

St. WS 85. 25. iii. 27. 8 miles S 66° E of Lively Island, East Falkland Islands. Commercial otter trawl, 79 m.: 9 specimens, 120–380 mm.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 355 mm.

St. WS 221. 4. vi. 28. 48° 23′ S, 65° 10′ W. Tow-net attached to back of trawl, 76–91 m.: 1 specimen, 45 mm.

St. WS 583. 2. v. 31. 53° 39′ S, 70° 54′ 30″ W. Small beam trawl, 14–78 m.: 3 specimens, 86–130 mm.

9. v. 31. Puerto Acero. Hand line, 23 m.: 1 specimen, 360 mm.

St. WS 781. 6. xi. 31. 50° 30′ S, 58° 50′ W. Commercial otter trawl, 148 m.: 1 specimen, 240 mm.

St. WS 787. 7. xii. 31. 48° 44′ S, 65° 24′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 106–110 m.: 2 specimens, 180, 182 mm.

St. WS 792. 15. xii. 31. 45° 49′ 30″ S, 62° 20′ 15″ W. Net (7 mm. mesh) attached to back of trawl, 102–106 m.: 1 specimen, 235 mm.

St. WS 803. 5. i. 32. 50° 33′ 45″ S, 62° 05′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 173–186 m.: 1 specimen, 180 mm.

St. WS 804. 6. i. 32. 50° 22′ 45 S, 62° 49′ W. Commercial otter trawl, with nets attached, 150–143 m.: 2 specimens, 133, 135 mm.

St. WS 836. 3. ii. 32. 53° 05′ 30″ S, 67° 38′ W. Small beam trawl, 64 m.: 2 specimens, 170, 175 mm.

St. WS 878. 4. iv. 32. 52° 36′ S, 58° 54′ W. Rectangular net, 121 (–0) m.: 5 specimens, 37–80 mm.

Depth of body $3\frac{1}{3}$ to 5 in the length, length of head[1] $2\frac{1}{6}$ to $2\frac{2}{3}$. Snout (except in very young) longer than eye; diameter of which is 3 (young) to more than 7 in length of head (measured to opercular spine), and $1\frac{1}{4}$ to $2\frac{3}{5}$ in the distance from its posterior margin to upper angle of gill-opening; interorbital width 13 to 16 in length of head. Maxillary extending to below posterior part or hinder edge of eye, or a little beyond. 5 to 7 gill-rakers on lower part of anterior arch. Scales ciliated in the young, becoming smoother in adults; about 60 in a lateral longitudinal series. Dorsal VII (occasionally VI or VIII), 21–24; dorsal spines and rays increasing in length with age; longest soft-rays varying from $\frac{1}{3}$ to about $\frac{3}{4}$ length of head. Anal 20–24. Pectoral about $\frac{1}{2}$ as long as head; 6 (occasionally 5 or 7) lowest rays simple and somewhat thickened. Caudal subtruncate; caudal peduncle as deep as long or a little longer than deep. Brownish, blackish, or orange-yellow, the head and sides of the body spotted and marbled with darker; usually 3 irregular dark-brown saddle-like cross-bars on upper part of body; fins irregularly spotted or blotched with brown; soft dorsal sometimes dusky, with numerous round pale spots; membranous processes on sides yellowish-white.

Hab. Argentina; Patagonian-Falklands region; southern Chile.

[1] Measured to tip of gill-cover.

In addition to the above, Mr Bennett has sent 3 specimens (140–340 mm.) caught by hook in $1\frac{1}{2}$ fathoms at Stanley, Falkland Islands, in March, 1934. There are also 15 specimens (100–480 mm.) in the British Museum collection, from various localities in the Patagonian region, including the types of the species[1] and the types of *C. macrophthalma*.

Schneider's *Batrachus trigloides* was based upon the MS. and drawing of Forster (MS. IV, 44). I have seen the drawing, which is a poor pencil sketch, and this represents

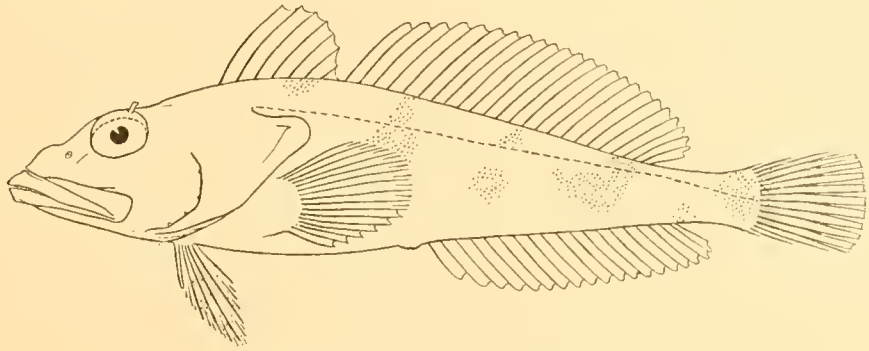

Fig. 29. *Cottoperca gobio*. $\times \frac{1}{2}$.

either a *Cottoperca* or *Notothenia*. Since the dorsal rays are given as VII, 22, and the anal rays 21, it would appear to belong to this genus.

Cottoperca gobio exhibits considerable variation in the size of the eye, height of the fins, and in other features, but after carefully examining and tabulating about 70 specimens I am unable to recognize more than one species.[2] Judging from published descriptions and notes, the colour in life is also subject to considerable variation.

Bovichtus argentinus, MacDonagh.

Bovichthys diacanthus (*non* Carmichael), Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 65; Berg, 1897, *Anal. Mus. Nac. B. Aires*, V, p. 298.

"*Bovichthys patagonicus*", (Berg) Regan, 1914, *Brit. Antarct.* ('*Terra Nova*') *Exped.* 1910, Zool. 1 (1), p. 26.

Bovichthys argentinus, MacDonagh, 1931, *Not. Prelim. Mus. La Plata*, 1, p. 99; MacDonagh, 1934, *Rev. Mus. La Plata*, XXXIV, p. 77, pl. viii, fig. 2, pl. ix, pl. x, fig. 1, text-figs.

Hab. Coast of Argentina and northern Patagonia.

No specimens of this species were obtained by the expedition, but I am indebted to Mr MacDonagh for a young example (54 mm. in total length) from Puerto Madryn. The holotype (285 mm.) was taken in the Bahia del Fondo, Golfo San Jorge, and others have been recorded from La Plata. This species appears to be very close to *B. chilensis*, Regan, but seems to have a somewhat wider and more concave interorbital region. It is possible that comparison of specimens of similar size would show the two species to be identical.

[1] The types are two skins, 400 and 420 mm. long, from Port Famine.

[2] Mr E. R. Gunther informs me that he studied a fairly large series of examples in a fresh condition, but was also unable to separate them into more than one species.

NOTOTHENIIDAE

Key to the Patagonian genera

I. Body scaly; gill-membranes forming a fold across the isthmus; opercles normal.

A. Two or three lateral lines; maxillary usually extending to below eye; pectoral rounded or vertically truncated.

1. Teeth usually in bands, but sometimes irregularly bi- or triserial with some of the teeth of the outer series enlarged and canine-like; snout not much longer than eye; usually less than 100 scales in a longitudinal series ... ... *Notothenia.*

2. Teeth in upper jaw biserial, those of the outer row enlarged, spaced, canine-like; a group of stronger canine teeth on each praemaxillary; teeth in lower jaw uniserial, spaced, canine-like; snout much longer than eye; 110 to 120 scales in a longitudinal series ... ... *Dissostichus.*

B. One lateral line; maxillary not reaching eye in the adult fish; pectoral very obliquely truncated, the upper rays longest ... ... *Eleginops.*

II. Body naked; gill-membranes broadly united to isthmus; operculum hooked upwards posteriorly, its upper edge deeply concave; operculum and suboperculum each forming a strong spine ... ... *Harpagifer.*

Genus Notothenia, Richardson

Notothenia, Richardson, 1844, *Zool. 'Erebus' and 'Terror'*, Fishes, p. 5; Günther, 1860, *Cat. Fish.*, II, p. 260; Regan, 1913, *Trans. Roy. Soc. Edinb.*, XLIX, p. 264. Type *N. coriiceps*, Richardson.

Macronotothen, Gill, 1862, *Proc. Acad. N.S. Philad.* (1861), p. 520. Type *Notothenia? rossii*, Richardson.

The problems raised by the study of the very rich material of this genus obtained by the Discovery Expedition have led me to undertake a new revision of the South American and Falkland Islands species, which amplifies and to some extent modifies those of Regan (1913) and Thompson (1916). This is one of the largest and most characteristic of the genera found in the Patagonian region, and the identification of the species is always a matter of some difficulty. As Regan has shown, the species of this region are very different from those of South Georgia, and, with one or two exceptions, are peculiar to it.

Key to the species of the Patagonian region

I. Opercles fully scaled.

A. Upper surface and sides of head scaled, including praeorbital and parts of snout; eye 3 in head (in a specimen of 190 mm.), interorbital width about 9; 42 tubular scales in upper lateral line, which extends to below fourth from last ray of dorsal ... *macrophthalma.*

B. Upper surface and sides of head scaled, except snout and praeorbital; eye 3 (young) to 6 in head, interorbital width 4 to 8.

1. 60 to 65 tubular scales in upper lateral line; lower jaw more or less strongly projecting; 9 or 10 rows of scales between the eyes.

a. 3 lateral lines; jaws without distinct canines ... ... *trigramma.*

b. 2 lateral lines; many of the teeth in the jaws spaced, canine-like ... ... *canina.*

2. 41 to 55 tubular scales in upper lateral line; jaws equal or lower a little projecting; 3 to 8 rows of scales between the eyes.
   a. Upper lateral line ending below or a little behind last ray of dorsal; soft dorsal variegated with small, dark spots.
      (i) 20 to 25 gill-rakers on lower part of anterior arch; longest dorsal spine at least $\frac{2}{3}$ head; scales on upper surface of head roughly ctenoid; pectoral $\frac{2}{3}$ to $\frac{4}{5}$ head ... ... *jordani.*
      (ii) 14 to 16 gill-rakers on lower part of anterior arch; longest dorsal spine less than $\frac{1}{2}$ head; scales on upper surface of head smooth; pectoral $\frac{3}{5}$ to $\frac{2}{3}$ head ... ... *tessellata.*
   b. Upper lateral line extending to well beyond last ray of dorsal; soft dorsal plain or with indistinct markings.
      (i) Dorsal IV–V 34–37; least depth of caudal peduncle $\frac{2}{7}$ to $\frac{2}{5}$ length of head.
         α. Eye $4\frac{1}{3}$ to $4\frac{1}{2}$ in head (in specimens of 120–155 mm.); 16 to 19 gill-rakers on lower part of anterior arch; least depth of caudal peduncle about $\frac{1}{3}$ length of head ... ... *brevicauda.*
         β. Eye $3\frac{3}{4}$ to $4\frac{1}{3}$ in head (in specimens of 120–190 mm.); 19 to 23 gill-rakers on lower part of anterior arch; least depth of caudal peduncle less than $\frac{1}{3}$ length of head ... ... *guntheri.*
      (ii) Dorsal VI–VIII (very occasionally V) 34–37; least depth of caudal peduncle $\frac{1}{4}$ to $\frac{2}{7}$ length of head.
         α. 16 to 25 gill-rakers on lower part of anterior arch; interorbital width $4\frac{1}{5}$ to nearly $6\frac{1}{4}$ in head (narrower in young), eye 3 (young) to 5; scales on upper surface of head more or less ctenoid, except in large specimens, 6 to 8 rows between the eyes; pelvics rather shorter than pectorals, extending to or nearly to vent ... ... *ramsayi.*
         β. 15 to 19 gill-rakers on lower part of anterior arch; interorbital width $5\frac{4}{5}$ to $7\frac{1}{3}$ in head, eye 4 to 5; scales on upper surface of head smooth, 5 or 6 rows between the eyes; pelvics shorter than pectorals, not or only just reaching vent ... ... *wiltoni.*
         γ. 14 to 16 gill-rakers on lower part of anterior arch; interorbital width 7 to 8 in head, eye 3 to $3\frac{3}{5}$; scales on upper surface of head smooth, about 5 rows between the eyes; pelvics as long as or longer than pectorals, extending to origin of anal or beyond ... ... *longipes.*
3. 30 to 40 tubular scales in upper lateral line; jaws equal or lower a little projecting.
   a. Depth $3\frac{2}{3}$ to 4 in length (without caudal); interorbital width $3\frac{3}{4}$ to $4\frac{1}{2}$ in head (narrower in young); 13 to 16 gill-rakers on lower part of anterior arch ... *squamiceps.*
   b. Depth 4 to 5 in length (without caudal); interorbital width $5\frac{1}{2}$ to nearly 8 in head; 9 to 12 gill-rakers on lower part of anterior arch ... ... *sima.*

II. Opercles scaled only on upper part of operculum; upper surface of head naked.
   A. Anal 27–32, length of base about 2 in that of fish (without caudal); interorbital width $4\frac{2}{3}$ to 13 in head; pelvics as long as or nearly as long as pectorals, extending to or nearly to vent; caudal peduncle deeper than long.
      1. Interorbital width $4\frac{2}{3}$ to 6 in head; depth of body $3\frac{2}{3}$ to $4\frac{1}{2}$ in the length; generally 5 dorsal spines ... ... *cornucola.*
      2. Interorbital width 10 to 13 in head; depth of body 6 to 7 in the length; 6 dorsal spines ... ... *elegans.*

B. Anal 22–25, length of base $2\frac{1}{3}$ to $2\frac{2}{3}$ in that of fish (without caudal); interorbital width $2\frac{1}{2}$ to $3\frac{1}{2}$ in head; pelvics much shorter than pectorals, not nearly reaching vent; caudal peduncle usually as long as deep or longer than deep.

1. Scales smooth; 36 to 46 tubular scales in upper lateral line; 50 to 60 scales in a lateral longitudinal series ... ... *macrocephala.*
2. Scales ctenoid; 51 to 56 tubular scales in upper lateral line; 67 to 73 scales in a lateral longitudinal series ... ... *microlepidota.*

Notothenia macrophthalma, sp.n.

St. WS 840. 53° 52′ S, 61° 49′ 15″ W. Commercial otter trawl, 368–463 m.: 1 specimen, 190 mm. Holotype.

Depth of body $4\frac{1}{2}$ in the length, length of head $3\frac{1}{3}$. Snout about $\frac{3}{4}$ diameter of eye, which is 3 in length of head; interorbital width about 9. Jaws about equal anteriorly; maxillary extending to below anterior $\frac{1}{5}$ of eye; teeth in bands, canines small; upper surface and sides of head, including praeorbital and parts of snout, scaled; scales on head ctenoid and mostly much smaller than those on body; 3 rows of scales between the eyes; 12 gill-rakers on lower part of anterior arch. Scales on body ctenoid; about

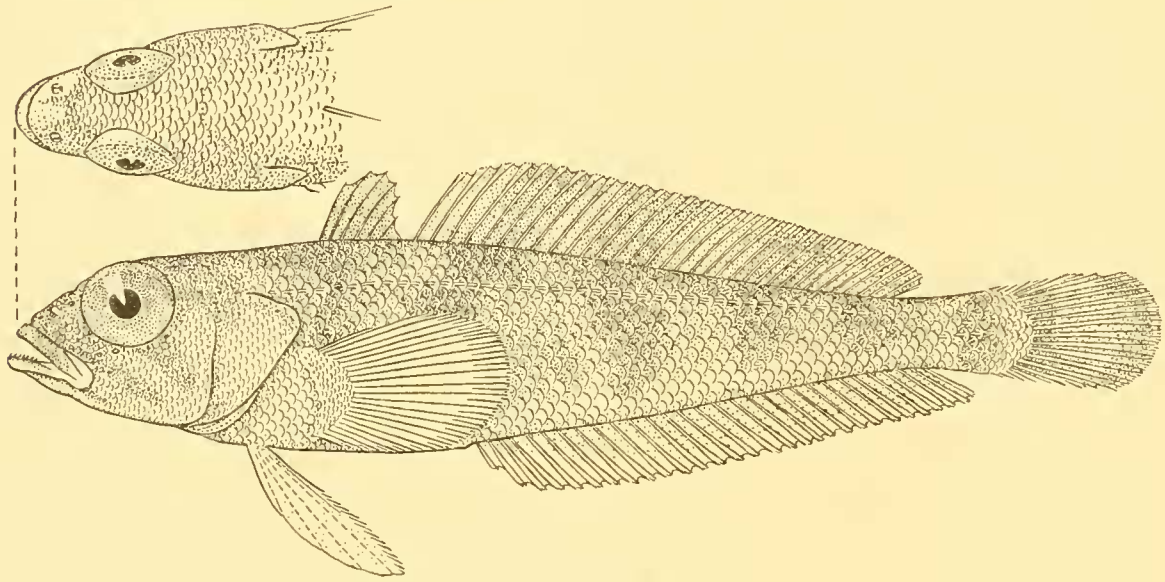

Fig. 30. *Notothenia macrophthalma.* Holotype. × $\frac{1}{5}$.

58 in a longitudinal series from above base of pectoral to caudal; 39 to 42[1] in upper lateral line, which ends below fourth from last ray of dorsal, 4 to 8 in lower lateral line. Dorsal VI 34; longest spine about $\frac{1}{3}$ length of head. Anal 30. Pectoral about $\frac{3}{4}$ the length of head, about as long as pelvics, which reach the vent. Caudal apparently rounded; caudal peduncle a little deeper than long. Body with broad, irregular cross-bars; cheek with two indistinct oblique stripes; dorsal fins partly blackish or dusky.

Hab. Near the Burdwood Bank, south of the Falkland Islands.

Very closely related to *N. squamifrons*, Günther, from Kerguelen, but with a some-

[1] Counted on the two sides of the body.

what larger eye, larger scales in the interorbital region, fewer gill-rakers, rather fewer dorsal and anal rays, and a much shorter lower lateral line.

Notothenia trigramma, Regan.

Notothenia trigramma, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 266, pl. vi, fig. 2; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 451.

Depth of body 5 in the length, length of head 4. Snout about as long as eye, diameter of which is 5 in length of head and equal to the interorbital width. Lower jaw projecting; maxillary extending to below anterior $\frac{1}{3}$ of eye; teeth in 3 to 5 rows anteriorly, those of the outer series enlarged but not canine-like; upper surface of head (except snout and praeorbital), cheeks and opercles covered with smooth scales; 9 or 10 rows of scales between the eyes; 15 gill-rakers on lower part of anterior arch. Scales on body ctenoid; about 85 in a lateral longitudinal series; 65 in upper lateral line, which nearly reaches caudal, 13 in line on middle of tail, and 40 to 45 in a third lower lateral line, which is separated by 4 or 5 longitudinal series of scales from the base of the anal fin. Dorsal VI 34; third spine longest, about $\frac{1}{3}$ length of head. Anal 32. Pectoral about $\frac{2}{3}$ the length of head, longer than pelvics, which do not reach vent. Caudal rounded; caudal peduncle about $\frac{2}{3}$ as long as deep, its least depth about $\frac{1}{3}$ length of head. Brownish; fins darker; a dark blotch on posterior part of spinous dorsal.

Hab. Falkland Islands.

Known only from the unique holotype, 280 mm. in total length, from Port Stanley, preserved in the Royal Scottish Museum, Edinburgh (Bruce Collection).[1] Quite apart from the presence of a third lateral line, this fish does not agree with any known species of *Notothenia*. It is most like *N. wiltoni*, which also occurs at the Falklands, but that species has only 48 to 53 scales in the upper lateral line, the lower jaw only a little longer than the upper, the head larger, and the interorbital region narrower.

Notothenia canina, Smitt.

Notothenia tessellata forma *canina*, Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, IV, No. 3, p. 25, pl. i, figs. 10, 11, pl. ii, figs. 20–22.

Notothenia acuta (*non* Günther), Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 303; Delfin, 1901, *Cat. Peces Chile*, p. 86.

Notothenia canina, Boulenger, 1902, '*Southern Cross*', Pisces, p. 183; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 267; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 90; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 455.

St. WS 89. 7. iv. 26. 9 miles N 21° E of Arenas Point Light, Tierra del Fuego. Commercial otter trawl, 23–21 m.: 2 specimens, 65, 138 mm.

St. WS 812. 10. i. 32. 51° 16′ 15″ S, 68° 52′ W. Net (7 mm. mesh) attached to back of trawl, 53–55 m.: 7 specimens, 68–115 mm.

St. WS 833. 1. ii. 32. 52° 30′ S, 68° 00′ W. Nets (4 and 7 mm. mesh) and seine net attached to back of trawl, 38–31 m.: 18 specimens, 85–135 mm.

St. WS 834. 2. ii. 32. 52° 57′ 45″ S, 68° 08′ 15″ W. Net attached to back of trawl, 27–38 m.: 8 specimens, 90–160 mm.

[1] I am indebted to the authorities of the museum for the loan of this specimen for re-examination.

St. WS 835. 2. ii. 32. 53° 05′ 30″ S, 68° 06′ 30″ W. Small beam trawl, 14–16 m.: 44 specimens, 50–130 mm.

St. WS 836. 3. ii. 32. 53° 05′ 30″ S, 67° 38′ W. Small beam trawl, 64 m.: 4 specimens, 132–160 mm.

St. WS 847. 9. ii. 32. 50° 15′ 45″ S, 67° 57′ W. Commercial otter trawl, 51–56 m.: 1 specimen, 200 mm.

Depth of body 5 to 6 in the length, length of head $3\frac{1}{4}$ (young) to $3\frac{2}{3}$. Snout (except in young) as long as or a little longer than eye, diameter of which is 4 (young) to $5\frac{2}{3}$ in length of head; interorbital width 5 to $5\frac{1}{2}$. Lower jaw strongly projecting; maxillary extending to or nearly to below middle of eye; teeth irregularly bi- or triserial in upper jaw, uniserial in lower, those of outer series of upper jaw and most of those in lower jaw enlarged, spaced and canine-like; upper surface of head (except snout and praeorbital), cheeks and opercles covered with smooth scales; about 9 rows of scales between the eyes; 14 to 16 gill-rakers on lower part of anterior arch. Scales on body smooth;

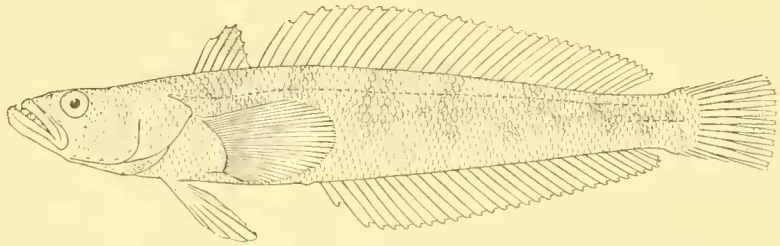

Fig. 31. *Notothenia canina.* $\times\frac{1}{2}$.

78 to 84 in a lateral longitudinal series; 60 to 65 tubular scales in upper lateral line, which extends to midway between last ray of dorsal and caudal, 6 to 9 in lower lateral line. Dorsal VI 30–34; third spine generally longest, not more than $\frac{1}{3}$ length of head. Anal 30–32. Pectoral about $\frac{3}{4}$ the length of head; pelvics shorter, not reaching vent. Caudal rounded; caudal peduncle as deep as long or a little deeper than long. Pale brownish, with a lateral series of about 7 dark blotches or irregular cross-bars; spinous dorsal with a dark blotch; soft dorsal often with small spots arranged in rows; caudal with a narrow pale hinder margin.

Hab. Patagonian-Falkland region; Straits of Magellan.

This species, which was previously unrepresented in the British Museum collection, differs from almost all other species of the genus in the form and arrangement of the teeth, and in this respect it approaches *Dissostichus*. Steindachner's specimens from Tierra del Fuego, identified by him as *N. acuta*, Günther, clearly belonged to this species. Thompson has identified them as *N. tessellata*, but has overlooked Steindachner's description of the projecting lower jaw, large mouth cleft, unequal teeth, and the presence of 57 to 59 tubular scales in the upper lateral line. The types of the species, 90, 120 and 138 mm. in total length, were all from Puerto Gallegos, on the east coast of Patagonia, at a depth of 3 to 5 metres.

Notothenia jordani, Thompson.

Notothenia jordani, Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 443, pl. iii, fig. 3.

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 2 specimens, 160, 165 mm.

St. WS 833. 1. ii. 32. 52° 30′ S, 68° 00′ W. Nets (4 and 7 mm. mesh) and seine net attached to back of trawl, 38–31 m.: 9 specimens, 120–175 mm.

St. WS 834. 2. ii. 32. 52° 57′ 45″ S, 68° 08′ 15″ W. Seine net attached to back of trawl, 27–38 m.: 12 specimens, 55–120 mm.

St. WS 836. 3. ii. 32. 53° 05′ 30″ S, 67° 38′ W. Small beam trawl, 64 m.: 19 specimens, 110–220 mm.

Depth of body $4\frac{1}{4}$ to $4\frac{3}{4}$ in the length, length of head $3\frac{1}{3}$ to $3\frac{4}{5}$. Snout about as long as eye, diameter of which is 4 to 5 in length of head; interorbital width about 5. Lower jaw a little longer than upper; maxillary extending to below anterior part or middle of eye; teeth in bands, none enlarged; upper surface of head (except snout and praeorbital), cheeks and opercles covered with ctenoid scales, which do not extend forward beyond anterior edges of eyes; 3 to 5 rows of scales between the eyes. 20 to 25 rather long, fine gill-rakers on lower part of anterior arch. Scales on body ctenoid; 58 to 62 in a lateral longitudinal series; 43 to 48 tubular scales in upper lateral line, which extends to or very slightly beyond last ray of dorsal, 8 to 17 in lower lateral line. Dorsal VI–VIII (usually VII) 33–35; second spine generally longest, $\frac{2}{3}$ to $\frac{3}{4}$ length of

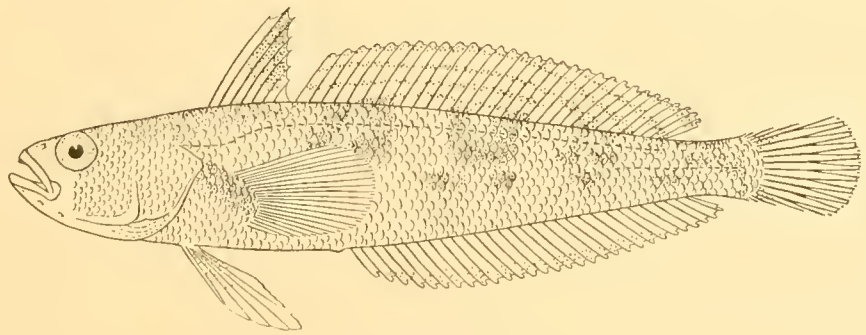

Fig. 32. *Notothenia jordani*. $\times\frac{2}{3}$.

head. Anal 31–33. Pectoral $\frac{2}{3}$ to $\frac{4}{5}$ the length of head, about as long as pelvics, which extend to or nearly to vent. Caudal rounded; caudal peduncle about as deep as long, its least depth $\frac{1}{4}$ or rather more than $\frac{1}{4}$ length of head. Pale brownish, with irregular broad dark cross-bars directed obliquely forward on upper parts of sides, continued on to the base of the soft dorsal, where they appear as dark blotches; usually a dark patch in the centre of the caudal peduncle; traces of yellowish-brown longitudinal stripes on sides; spinous dorsal dusky; soft dorsal with narrow, somewhat oblique, longitudinal stripes; anal uniformly pale or dusky at base; pectorals pale, with a dusky blotch across the base; pelvics yellowish.

Hab. Patagonian-Falklands region; Straits of Magellan.

This species, which is new to the British Museum collection, was described by Thompson from numerous specimens from off the Gulf of St George, off Cape Virgins,

just south of Cape Virgins, and between Cape Virgins and the First Narrows in the Straits of Magellan. The holotype (U.S.N.M. No. 76855) is 125 mm. long.

Notothenia tessellata, Richardson. "Siouna."

Notothenia tessellata, Richardson, 1845, *Zool. 'Erebus' and 'Terror'*, Fishes, p. 19, pl. xii, figs. 3, 4; Günther, 1860, *Cat. Fish.*, II, p. 260; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 469; Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 72, pl. v (right-hand fig.); Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 24; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 618; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 6; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 8; Roule, Angel and Despax, 1913, *Deux. Expéd. Antarct. Franç.* (1908–1910), Poiss., p. 3; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 268; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXIII, p. 89; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 448.

Notothenia veitchii, Günther, 1874, *Ann. Mag. Nat. Hist.* (4) XIV, p. 370.

Notothenia tessellata (part), Günther, 1881, *Proc. Zool. Soc.*, p. 20; Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, IV, No. 3, p. 25; Delfin, 1901, *Cat. Peces Chile*, p. 86.

Notothenia brevipes, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 15.

? *Notothenia gilberti*, Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 430, pl. ii, fig. 3.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Islands. Large otter trawl, 105–115 m.: 6 specimens, 135–160 mm.

St. 55. 16. v. 26. Entrance to Port Stanley, East Falkland Islands. Small beam trawl, 10–16 m.: 1 specimen, 100 mm.

St. WS 72. 5. iii. 27. 51° 07′ S, 57° 34′ W. Commercial otter trawl, 79 m.: 7 specimens, 85–130 mm.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 6 specimens, 130–200 mm.

St. WS 75. 10. iii. 27. 51° 01′ 30″ S, 60° 31′ W. Commercial otter trawl, 72 m.: 16 specimens, 130–220 mm.

St. 222. 23. iv. 27. St Martin's Cove, Hermite Island, Cape Horn. Large rectangular net, 30–35 m.: 1 specimen, 55 mm.

St. 223. 27. iv. 27. St Francis' Bay, Cape Horn. Large rectangular net, 63 m.: 3 specimens, 65–75 mm.

St. WS 576. 17. iv. 31. 51° 35′ S, 57° 49′ 45″ W. Commercial otter trawl, 34–24 m.: 1 specimen, 53 mm.

St. WS 582. 30. iv. 31. 53° 42′ 30″ S, 70° 55′ W. Hand line, 12 m.: 11 specimens, 125–175 mm.

2. v. 31. Bay San Nicolas. Hand line, 17 m.: 2 specimens, 137, 165 mm.

4. v. 31. Field Anchorage, Magellan Straits. Hand line, 26 m.: 3 specimens, 150–185 mm.

St. 724. 16. xi. 31. Fortescue Bay, Magellan Straits. Seine net, 0–5 m.: 10 specimens, 80–125 mm.

St. WS 872. 1. iv. 32. 53° 48′ S, 64° 18′ 30″ W. Commercial otter trawl, 139–141 m.: 1 specimen, 290 mm.

Depth of body $4\frac{1}{2}$ to 6 in the length, length of head $3\frac{1}{4}$ to $3\frac{2}{3}$. Snout (except in very young) as long as or longer than eye, diameter of which is $3\frac{1}{2}$ (young) to 6 in length of head; interorbital width $5\frac{1}{2}$ to $6\frac{3}{4}$ (narrower in young). Lower jaw rather prominent, the velum (measured from tip of jaw to edge of flap) at least $\frac{2}{3}$ diameter of eye in adults; maxillary extending to below anterior part or middle of eye; teeth in two rather irregular rows, those of the outer series somewhat enlarged anteriorly; upper surface of head (except snout), cheeks and opercles covered with smooth scales, which are often more or less embedded in the skin; 6 or 7 rows of scales between the eyes; 14 to

16 gill-rakers on lower part of anterior arch. Scales on body smooth or rather feebly ctenoid; 70 to 80 in a lateral longitudinal series; 41 to 48 tubular scales in upper lateral line, which ends below or a little behind last ray of dorsal, 6 to 11 in lower lateral line. Dorsal VI–VII 32–35; longest spine not more than $\frac{1}{3}$ length of head. Anal 31–34. Pectoral from less than $\frac{3}{5}$ to more than $\frac{2}{3}$ length of head, usually longer than the pelvics, which seldom reach origin of anal. Caudal rounded; caudal peduncle deeper than long. Body marbled, spotted and blotched with darker; spinous dorsal usually with a dense black spot covering greater part of fin, and with a narrow white edge; soft dorsal, caudal, and sometimes anal variegated with series of dark spots, the margins of the fins clear white.

Hab. Patagonian-Falklands region; Straits of Magellan; southern Chile, northwards to Chiloe.

In addition to the above, Mr Bennett has sent 9 specimens (150 to 240 mm.) from the Dockyard Jetty, Stanley, Falkland Islands, taken in a trap set in $1\frac{1}{2}$ fathoms in November, 1933; as well as 8 others (140–225 mm.), collected near the beach at New

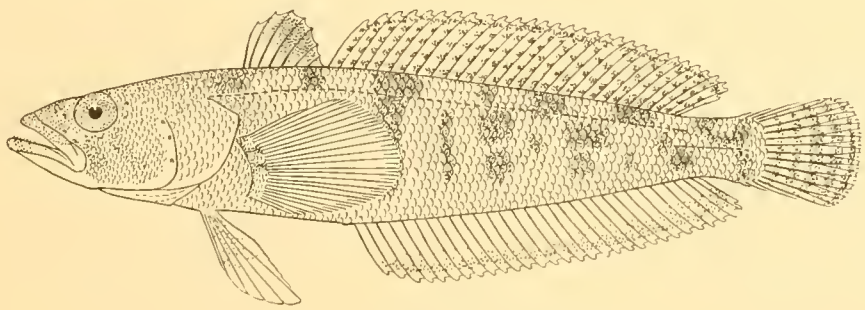

Fig. 33. *Notothenia tessellata.* $\times \frac{2}{3}$.

Island, West Falklands, by Mr Hamilton in February, 1934. There are also 21 specimens (140–250 mm.) in the British Museum collection, including the types of the species, the types of *N. veitchii*, and 2 specimens (probably paratypes) of *N. brevipes*, received from Professor Lönnberg.

Apart from the very short snout, I am unable to detect any differences between *N. gilberti* (based upon two specimens, both 60 mm. in total length) and young examples of *N. tessellata*. In an example of 53 mm. collected by the 'William Scoresby' the snout has been pushed inwards, giving the head an appearance very similar to that shown in the figure of *N. gilberti*.

This species is fairly common at the Falkland Islands, where it is known as "Rock Cod", a name given indiscriminately to all species of *Notothenia*. Mr Bennett notes that these fishes arrive round the shores in October and November, and disappear about the middle of April. They lurk around jetties, under rocks, and in the "kelp", becoming most active about sunset. Shags and seals are their natural enemies, but penguins may take toll of the smaller fish. They may be caught with a bait of raw lean mutton, but are not popular as food.

Notothenia brevicauda, Lönnberg.

? *Notothenia cyanobranchia* (*non* Richardson), Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 26.

Notothenia brevicauda, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 6, pl. v, fig. 16; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 269.

Notothenia longicauda, Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 445, pl. iv, fig. 1.

St. 56. 16. v. 26. Sparrow Cove, Port William, East Falkland Islands, $1\frac{1}{2}$ cables N 50° E of Sparrow Point. Small beam trawl, $10\frac{1}{2}$–16 m.: 2 specimens, 105, 140 mm.

Depth of body $4\frac{1}{2}$ to 5 in the length, length of head $3\frac{1}{4}$ to $3\frac{3}{5}$. Snout as long as or a little longer than eye, diameter of which is $4\frac{1}{3}$ to $4\frac{1}{2}$ (in specimens of 120–155 mm.) or 4 to $4\frac{1}{3}$ (in specimens of 85–120 mm.) in length of head; interorbital width 6 to 8. Jaws about equal anteriorly; maxillary extending to below anterior $\frac{1}{3}$ of eye; teeth in bands, those of the outer row enlarged anteriorly; upper surface of head (except snout and praeorbital), cheeks and opercles covered with smooth scales; 4 to 6 rows of scales between the eyes; scales absent across the occiput in the region of the occipital branch of the lateral line system; 16 to 19 gill-rakers on lower part of anterior arch. Scales on

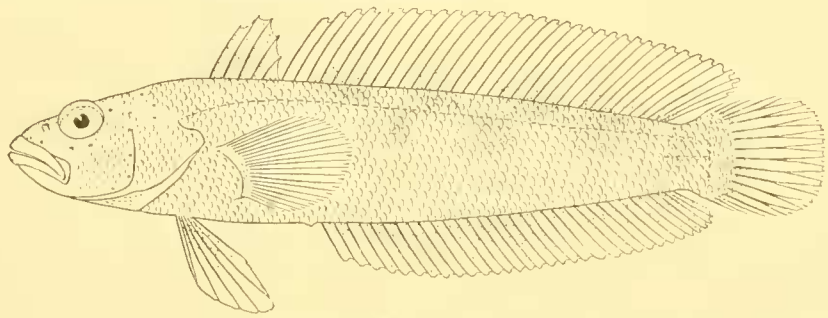

Fig. 34. *Notothenia brevicauda*. × $\frac{2}{3}$.

body ctenoid; 60 to 70 in a lateral longitudinal series; 44 to 50 tubular scales in upper lateral line, which ends 2 to 4 scales in front of caudal, 4 to 12 in lower lateral line. Dorsal V 35–37; longest spine not more than $\frac{2}{5}$ length of head; posterior rays of dorsal and anal (in adults) overlapping the caudal when laid back. Anal 32–35. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, as long as or a little shorter than pelvics, which extend to the anal or not quite as far. Caudal rounded; caudal peduncle $\frac{1}{2}$ to more than $\frac{2}{3}$ as long as deep, its least depth about $\frac{1}{3}$ (to $\frac{1}{2}$) length of head. Brownish or olivaceous; body with irregular dark cross-bars, which may extend on to base of soft dorsal; both dorsals and caudal usually more or less dusky, the soft dorsal and caudal narrowly margined with white; anal usually darker, often nearly black; pectorals yellowish; pelvics dusky.

Hab. Falkland Islands; Straits of Magellan: in shallow water.

In addition to the above, Mr Bennett has sent one specimen (155 mm.) from Stanley, and another (140 mm.) from near the beach, New Island, West Falklands, collected by Mr Hamilton. There are also 8 specimens (85–180 mm.) in the British Museum collection, from the Falklands, Puerto Bueno, Fortescue Bay, and Port Famine.

N. longicauda was described by Thompson from 9 specimens, the largest 110 mm. long, all but the holotype (78 mm.) being in a poor state of preservation. The type was

from Island Harbour, Patagonia; another was from Gregory Bay; and seven were from 'Albatross' Station 2771, at a depth of 50½ fathoms. I have examined one of these last, but it is in such a poor state as to be useless for comparison. After considering Thompson's description and figure, I agree with Regan (1916, *Ann. Mag. Nat. Hist.*, Ser. 8, XVIII, p. 379) that his type at least is referable to the species here identified as *N. brevicauda*. It is probable, however, that the examples taken by the 'Albatross' in deeper water may have belonged to the form described below as *N. guntheri*. The type of *N. brevicauda* from Ushuaia (120 mm. long without caudal), judging from Lönnberg's figure, has an exceptionally short and deep caudal peduncle, but is in other respects similar to specimens identified by Regan as this species.

Notothenia guntheri, sp.n. (Pl. I, fig. 1).

St. WS 86. 3. iv. 27. 53° 53′ 30″ S, 60° 34′ 30″ W. Commercial otter trawl, 151–147 m.: 41 specimens, 70–210 mm.

St. WS 87. 3. iv. 27. 54° 07′ 30″ S, 58° 16′ W. Commercial otter trawl, 96–127 m.: 1 specimen, 135 mm.

St. WS 93. 9. iv. 27. 7 miles S 80° W of Beaver Island, West Falkland Islands. Commercial otter trawl, 133–136 m.: 20 specimens, 95–170 mm.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 4 specimens, 130–180 mm.

St. WS 98. 18. iv. 27. 49° 54′ 15″ S, 60° 35′ 30″ W. Commercial otter trawl, 173–171 m.: 2 specimens, 175, 190 mm. (holotype, 190 mm.).

St. WS 225. 9. vi. 28. 50° 20′ S, 62° 30′ W. Net (7 mm. mesh) attached to back of trawl, 162–161 m.: 1 specimen, 165 mm.

St. 652. 14. iii. 31. Burdwood Bank, 54° 04′ S, 61° 40′ W. Large otter trawl, 171–169 m.: 3 specimens, 145–175 mm.

St. WS 781. 6. xi. 31. 50° 30′ S, 58° 50′ W. Commercial otter trawl, 148 m.: 1 specimen, 150 mm.

St. WS 804. 6. i. 32. 50° 21′ 15″ S, 62° 53′ W. Net (7 mm. mesh) attached to back of trawl, 143–150 m.: 1 specimen, 120 mm.

St. WS 814. 13. i. 32. 51° 45′ 15″ S, 66° 40′ W. Net (7 mm. mesh) attached to back of trawl, 111–118 m.: 1 specimen, 160 mm.

St. WS 825. 28–29. i. 32. 50° 50′ S, 57° 15′ 15″ W. Net (7 mm. mesh) attached to back of trawl, 135–144 m.: 1 specimen, 145 mm.

St. WS 841. 6. ii. 32. 54° 11′ 45″ S, 60° 21′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 110–120 m.: 1 specimen, 160 mm.

Depth of body $4\frac{1}{2}$ to $5\frac{1}{4}$ in the length, length of head $3\frac{1}{4}$ to $3\frac{2}{3}$. Snout about as long as eye, diameter of which is $3\frac{3}{4}$ to $4\frac{1}{3}$ (in specimens of 120–190 mm.) or $3\frac{1}{2}$ to 4 (in specimens of 70–120 mm.) in length of head; interorbital width 6 to 8. Jaws about equal anteriorly; maxillary extending to below anterior $\frac{1}{4}$ of eye; teeth in bands, those of the outer row somewhat enlarged anteriorly; upper surface of head (except snout and praeorbital), cheeks and opercles covered with smooth scales; scales generally absent across the occiput as in the preceding species, but sometimes covering this region in larger specimens; 19 to 23 gill-rakers on lower part of anterior arch. Scales on body ctenoid; 63 to 75 in a lateral longitudinal series; 45 to 49 tubular scales in upper lateral line, which ends 2 to 4 scales in front of caudal, 4 to 10 in lower lateral line. Dorsal V

(occasionally IV) 34–37; longest spine not more than $\frac{2}{5}$ length of head; posterior rays of dorsal and anal not overlapping the caudal when laid back. Anal 32–35. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, as long as or rather longer than pelvics, which do not usually reach the anal. Caudal rounded; caudal peduncle $\frac{3}{5}$ to $\frac{3}{4}$ as long as deep, its least depth less than $\frac{1}{3}$ length of head. Brownish or greyish-brown, with somewhat irregular darker cross-bars on upper parts of sides, extending on to base of soft dorsal; median fins more or less dusky, the soft dorsal, caudal, and sometimes the anal with narrow pale margins; anal generally darker, often blackish; pectorals yellowish; pelvics more or less dusky.

Hab. Patagonian-Falklands region: in deeper water.

This species, which is well distinguished from the shallow-water *N. brevicauda*, is named after Mr E. R. Gunther of the 'Discovery' Expedition.

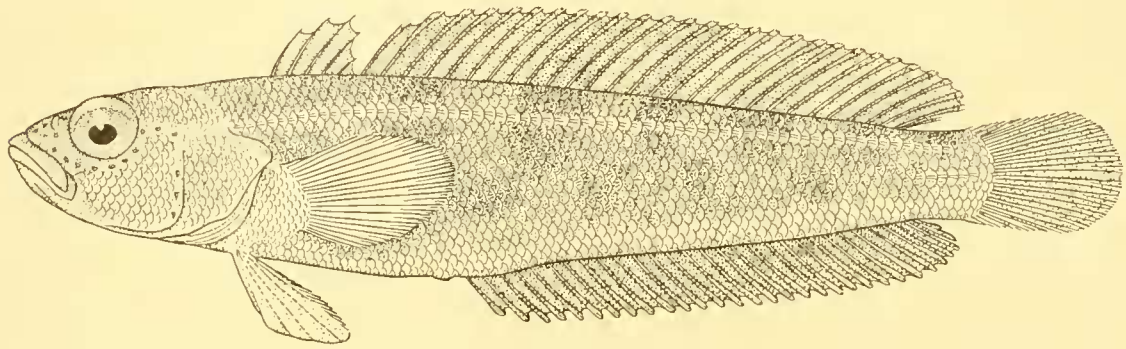

Fig. 35. *Notothenia guntheri.* Holotype. $\times\frac{3}{4}$.

Mr E. R. Gunther notes that in life the body is pale slaty grey, darker on back and becoming white ventrally, the general shade never being as deep as in *N. ramsayi.* The cross-bars, if present, are faint, and are sometimes green instead of grey. There are three or four golden green bands on the side of the head, the first sloping downwards from the maxillary, the others radiating from the praeorbital and eye, the third dilating into a green flush on the angle of the operculum. The iris is of a paler tint than that of *N. ramsayi.* The dorsal fins are bright emerald green, bordered with white, and the anal fin deep grey. The caudal fin is olive varied by lemon yellow, sometimes margined with orange, sometimes with brown and white. The pectoral is pale orange or salmon pink, sometimes lemon yellow, the base of the fin quite white. The pelvic is deep grey. The belly, which has been shaded in the sketch, should be white.

Notothenia ramsayi, Regan (Plate I, fig. 2).

Notothenia ramsayi, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 267, pl. vii, fig. 1; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 443.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Islands. Large otter trawl, 105–115 m.: 35 specimens, 60–110 mm.

St. WS 72. 5. iii. 27. 51° 07′ S, 57° 34′ W. Commercial otter trawl, 79 m.: 4 specimens, 110–135 mm.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 40 specimens, 55–235 mm.

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 6 specimens, 280–340 mm.

St. WS 83. 24. iii. 27. 14 miles S 64° W of George Island, East Falkland Islands. Commercial otter trawl, 137–129 m.: 3 specimens, 60–220 mm.

St. WS 86. 3. iv. 27. 53° 53′ 30″ S, 60° 34′ 30″ W. Commercial otter trawl, 151–147 m.: 25 specimens, 170–295 mm.

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 4 specimens, 110–295 mm.

St. WS 91. 8. iv. 27. 52° 53′ 45″ S, 63° 37′ 30″ W. Commercial otter trawl, 191–205 m.: 19 specimens, 135–355 mm.

St. WS 92. 8. iv. 27. 51° 58′ 30″ S, 65° 01′ W. Commercial otter trawl, 145–143 m.: 19 specimens, 120–320 mm.

St. WS 93. 9. iv. 27. 7 miles S 80° W of Beaver Island, West Falkland Islands. Commercial otter trawl, 133–130 m.: 21 specimens, 190–330 mm.

St. WS 94. 16. iv. 27. 50° 00′ 15″ S, 64° 57′ 45″ W. Commercial otter trawl, 110–126 m.: 18 specimens, 140–280 mm.

St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 96 m.: 1 specimen, 320 mm.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 335 mm.

St. WS 98. 18. iv. 27. 49° 54′ 15″ S, 60° 35′ 30″ W. Commercial otter trawl, 173–171 m.: 1 specimen, 240 mm.

St. WS 214. 31. v. 28. 48° 25′ S, 60° 40′ W. Net (7 mm. mesh) attached to back of trawl, 208–219 mm.: 6 specimens, 60–66 mm.

St. WS 219. 3. vi. 28. 47° 06′ S, 62° 12′ W. Net (7 mm. mesh) attached to back of trawl, 116–114 m.: 8 specimens, 60–90 mm.

St. WS 220. 3. vi. 28. 47° 56′ S, 62° 38′ W. Net (7 mm. mesh) attached to back of trawl, 108–104 m.: 3 specimens, 82–87 mm.

St. WS 222. 8. vi. 28. 48° 23′ S, 65° 00′ W. Nets attached to back of trawl, 100–106 m.: 18 specimens, 60–100 mm.

St. WS 246. 19. vii. 28. 52° 25′ S, 61° 00′ W. Commercial otter trawl, 267–208 m.: 4 specimens, 285–305 mm.

St. 652. 14. iii. 31. Burdwood Bank, 54° 04′ S, 61° 40′ W. Large otter trawl, 171–169 m.: 4 specimens, 110–180 mm.

St. WS 750. 19. ix. 31. 52° 12′ S, 67° 19′ W. Rectangular net, 95 m.: 1 specimen, 205 mm.

St. WS 754. 20. ix. 31. 51° 09′ 30″ S, 58° 54′ W. Rectangular net, 111 m.: 1 specimen, 70 mm.

St. WS 756. 10. x. 31. 50° 54′ 39″ S, 59° 58′ W. Commercial otter trawl, with net (7 mm. mesh) and seine net attached to back of trawl, 118–90 m.: 14 specimens, 60–110 mm.

St. WS 764. 17. x. 31. 44° 38′ 15″ to 44° 38′ 45″ S, 61° 58′ 30″ to 61° 49′ 30″ W. Commercial otter trawl, 110–104 m.: 50 specimens, 75–220 mm.

St. WS 771. 29. x. 31. 42° 41′ 45″ S, 60° 31′ W. Commercial otter trawl, 90 m.: 70 specimens, 70–120 mm.

St. WS 772. 30. x. 31. 45° 13′ 22″ S, 60° 00′ 15″ W. Commercial otter trawl, 309–162 m.: 2 specimens, 210, 220 mm.

St. WS 781. 6. xi. 31. 50° 30′ S, 58° 50′ W. Commercial otter trawl, 148 m.: 27 specimens, 100–325 mm.

St. WS 784. 5. xii. 31. 49° 47′ 45″ S, 61° 05′ W. Net (7 mm. mesh) and seine net attached to back of trawl, 170–164 m.: 12 specimens, 80–125 mm.

St. WS 787. 7. xii. 31. 48° 44′ S, 65° 24′ 30″ W. Nets attached to back of trawl, 106–110 m.: 30 specimens, 80–210 mm.

St. WS 788. 13. xii. 31. 45° 05′ S, 65° 00′ W. Commercial otter trawl, 82–88 m.: 1 specimen, 160 mm.

St. WS 789. 13. xii. 31. 45° 17′ S, 64° 22′ W. Seine net attached to back of trawl, 95–93 m.: 2 specimens, 155, 200 mm.

St. WS 792. 15. xii. 31. 45° 49′ 30″ S, 62° 20′ 15″ W. Nets attached to back of trawl, 102–112 m.: 48 specimens, 90–250 mm.

St. WS 795(?). 18. xii. 31. 46° 14′ S, 60° 24′ W. Commercial otter trawl, 157–161 m.: 8 specimens, 300–350 mm.

St. WS 797–805 or 811. Between 47° 45′ and 51° 27′ S, 63° 29′ and 68° 01′ W: 22 specimens, 130–325 mm.

St. WS 800. 21. xii. 31. 48° 15′ 45″ S, 62° 09′ 52″ W. Nets attached to back of trawl, 139–137 m.: 11 specimens, 110–120 mm.

St. WS 803. 5. i. 32. 50° 33′ 45″ S, 62° 05′ 30″ W. Commercial otter trawl, with net (7 mm. mesh) attached, 173–186 m.: 3 specimens, 125–215 mm.

St. WS 804. 6. i. 32. 50° 22′ 45″ S, 62° 49′ W. Commercial otter trawl, with net (7 mm. mesh) and seine net attached, 150–143 m.: 14 specimens, 110–135 mm.

St. WS 806. 7. i. 32. 50° 03′ 30″ S, 64° 21′ W. Commercial otter trawl, with net (7 mm. mesh) attached, 129–122 m.: 10 specimens, 130–350 mm.

St. WS 811. 12. i. 32. 51° 24′ 30″ S, 67° 53′ W. Commercial otter trawl, 96–98 m.: 10 specimens, 85–235 mm.

St. WS 839. 5. ii. 32. 53° 30′ 15″ S, 63° 29′ W. Commercial otter trawl, 403–434 m.: 1 specimen, 230 mm.

St. WS 841. 6. ii. 32. 54° 11′ 45″ S, 60° 21′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 110–120 m.: 1 specimen, 235 mm.

St. WS 844. 7–8. ii. 32. 52° 14′ S, 64° 10′ W. Rectangular net, 217 (–0) m.: 1 specimen, 270 mm.

St. WS 864. 28. iii. 32. 49° 33′ 30″ S, 64° 16′ W. Nets attached to back of trawl, 128–126 m.: 73 specimens, 45–70 mm.

St. WS 868. 30. iii. 32. 51° 44′ S, 64° 13′ W. Commercial otter trawl, 166–162 m.: 35 specimens, 140–340 mm.

St. WS 869. 31. iii. 32. 52° 15′ 30″ S, 64° 13′ 45″ W. Rectangular net, 187 (–0) m.: 1 specimen, 60 mm.

St. WS 874. 3. iv. 32. 52° 35′ 30″ S, 65° 14′ W. Rectangular net, 135–132 m.: 1 specimen, 235 mm.

St. WS 878. 4. iv. 32. 52° 36′ S, 58° 54′ W. Rectangular net, 121 (–0) m.: 1 specimen, 150 mm.

Depth of body 4 to $5\frac{1}{2}$ in the length, length of head 3 to $3\frac{3}{5}$. Snout as long as or a little longer than eye (shorter in young), diameter of which is 3 (young) to nearly 5 in length of head; interorbital width $4\frac{1}{5}$ to nearly $6\frac{1}{4}$. Jaws about equal anteriorly; maxillary extending to below anterior $\frac{1}{4}$ (occasionally anterior $\frac{1}{3}$) of eye; teeth in bands, those of outer row somewhat enlarged anteriorly; upper surface of head (except snout and praeorbital), cheeks and opercles scaled; scales on upper surface of head extending forward to level of nostrils, generally more or less ctenoid, except in large examples, in which they may be quite smooth; 6 to 8 rows of scales between the eyes (fewer in young); 16 to 25 gill-rakers on lower part of anterior arch. Scales on body more or less ctenoid; 60 to 72 in a lateral longitudinal series; 46 to 54 tubular scales in upper lateral line, which nearly reaches the caudal, 8 to 18 in lower lateral line. Dorsal VI (very occasionally V)–VIII (generally VII) 34–37; longest spine $\frac{1}{3}$ to a little more than $\frac{2}{5}$ length of head. Anal 31–35. Pectoral from less than $\frac{3}{5}$ to more than $\frac{2}{3}$ length of head, usually

rather longer than pelvics, which extend to vent or not as far and occasionally reach the anal fin. Caudal rounded; caudal peduncle $\frac{2}{3}$ to $\frac{4}{5}$ as long as deep, its least depth $\frac{1}{4}$ to $\frac{2}{7}$ length of head. Pale brownish, with a lateral series of 5 to 7 dark blotches or vertical bars; both dorsal fins dusky, the spinous dorsal paler at its base, the rays of the soft dorsal tipped with white; anal and caudal pale or more or less dusky, both fins narrowly margined with white; pectoral pale, usually with a dark vertical bar across the base.

Hab. Patagonian-Falklands region.

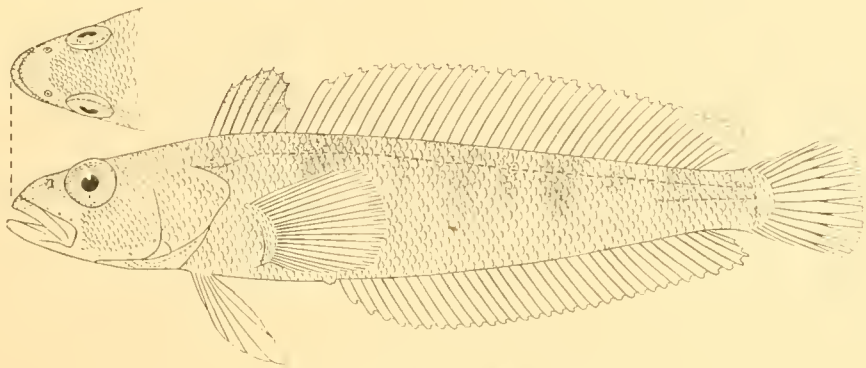

Fig. 36. *Notothenia ramsayi.* $\times \frac{3}{5}$.

In addition to the many specimens listed above, there are 6 more (205–330 mm.) in the British Museum collection, from the Burdwood Bank—the types of the species.[1]

This was the commonest species of *Notothenia* taken during the Trawling Surveys, and occurred at depths ranging from 82 to 434 metres. It does not seem to inhabit very shallow water, however, and in this respect bears much the same relationship to *N. wiltoni* as does *N. guntheri* to *N. brevicauda*.

Numbers of gill-rakers in N. wiltoni *and* N. ramsayi.

Gill-rakers	*N. wiltoni*	*N. ramsayi*
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

Mr E. R. Gunther notes that in life this species has the body grey, tinged with olive, darker on back and becoming white ventrally. The dark cross-bars are sometimes interspersed with pale silvery blue. The cheek is slightly silvery, the opercles more so

[1] The specimen from Isthmus Bay, Magellan Straits, identified by Regan as this species, is in poor condition, but probably belongs to *N. wiltoni*.

with a green and blue lustre; a red flush is sometimes present on upper margin of cheek. The colour of the iris is brazen. The dorsal fins are dusky, with vertical bars of auburn, and are often margined with white. The anal fin is grey, the free distal parts of the rays white. The caudal is olive. The pectoral is olive, usually pale, the base of the fin with a vertical bar of dark pigment. The pelvic is white or dusky. The belly, which is shaded in the sketch, should be white.

Notothenia wiltoni, Regan.[1]

Notothenia tessellata (part), Günther, 1881, *Proc. Zool. Soc.*, p. 20.

Notothenia longipes (*non* Steindachner), Günther, 1881, *t.c.*, p. 20; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 25; Jordan, 1891, *Proc. U.S. Nat. Mus.*, XIII, p. 335; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 15; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 451; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 267.

? *Notothenia squamifrons*, Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 24.

Notothenia wiltoni, Regan, 1913, *Trans. Roy. Soc. Edinb.*, XLIX, p. 268, pl. vii, fig. 2.

St. 55. 16. v. 26. Entrance to Port Stanley, East Falkland Islands, 2 cables S 24° E of Navy Point. Small beam trawl, 10–16 m.: 1 specimen, 105 mm.

St. 56. 16. v. 26. Sparrow Cove, Port William, East Falkland Islands, $1\frac{1}{2}$ cables N 50° E of Sparrow Point. Small beam trawl, $10\frac{1}{2}$–16 m.: 2 specimens, 100, 110 mm.

St. 222. 22–24. iv. 27. St Martin's Cove, Hermite Island, Cape Horn. Large fish-trap, 30–35 m.: 1 specimen, 225 mm.

4. v. 31. Field Anchorage, Magellan Straits. Hand line, 26 m.: 1 specimen, 210 mm.

Depth of body $4\frac{1}{2}$ to 5 in the length, length of head 3 to $3\frac{1}{3}$. Snout as long as or a little longer than eye, diameter of which is 4 to 5 in length of head; interorbital width $5\frac{4}{5}$ to $7\frac{1}{3}$. Lower jaw a little longer than the upper; maxillary extending to below anterior $\frac{1}{3}$ of eye or beyond (occasionally to below anterior $\frac{1}{4}$); teeth in bands, those of outer row somewhat enlarged anteriorly; upper surface of head (except snout and praeorbital), cheeks and opercles scaled; scales on upper surface of head all smooth, 5 or 6 rows between the eyes; (14) 15 to 19 gill-rakers on lower part of anterior arch. Scales on body more or less ctenoid; 62 to 75 in a lateral longitudinal series; 48 to 53 tubular scales in upper lateral line, which nearly reaches caudal, 6 to 13 in lower lateral line. Dorsal VI (occasionally VII) 34–36; longest spine not more than $\frac{1}{3}$ length of head. Anal 32–34. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, longer than pelvics, which extend just to the vent or not as far (in adults). Caudal rounded; caudal peduncle $\frac{3}{5}$ to $\frac{2}{3}$ as long as deep, its least depth $\frac{1}{4}$ to $\frac{2}{7}$ length of head. Dark greyish brown, with traces of indistinct darker cross-bars; dorsals, anal and caudal dusky, generally narrowly margined with white; pectoral pale, with a dark vertical bar across the base; pelvics more or less dusky.

Hab. Coasts of Argentina and eastern Patagonia; Straits of Magellan; Tierra del Fuego; Falkland Islands.

In addition to the above, Mr Bennett has sent 45 specimens (135–340 mm.) from Stanley, Falkland Islands, taken by hook or trap in 1 to $1\frac{1}{2}$ fathoms, or under stones at low water, in November, December, and January. There are also 7 specimens

[1] This species has been so often confused with *N. longipes* that it has proved impossible to give satisfactory full synonymies of these two forms.

(125–250 mm.) in the British Museum collection from the Falklands, Orange Bay, Isthmus Bay, Latitude Bay, and Sandy Point, including the types of the species and 2 specimens identified by Thompson as *N. longipes*, received from the United States National Museum.

This species appears to inhabit shallower water than the closely related *N. ramsayi*, from which it may be distinguished by the smooth scales on the upper surface of the head, rather larger mouth and smaller eye, narrower interorbital region, smaller average

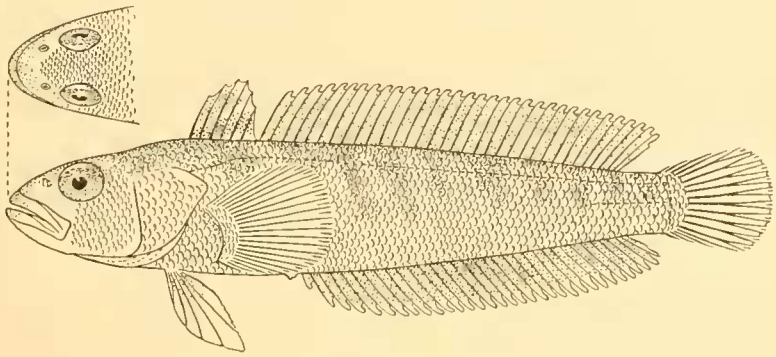

Fig. 37. *Notothenia wiltoni*. $\times \frac{2}{3}$.

number of gill-rakers, lower spinous dorsal fin, and generally darker colour. Mr Bennett notes that *N. wiltoni* is very common at certain seasons at the Falkland Islands, where it is known as "Rock Cod", a name also used for other species of *Notothenia*. According to him this fish seems to come to the shore in November at Stanley, and to leave at about the middle of April. As specimens taken in April showed enlarged reproductive organs, Mr Bennett assumes that the departure from Stanley is for breeding purposes. In the Falklands this species is found round jetties and in the "kelp", lurking under shelter during the day and becoming active about sunset.

Notothenia longipes, Steindachner.

Notothenia longipes, Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 70, pl. vi (right-hand fig.); Günther, 1880, *Shore Fish. 'Challenger'*, p. 21; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 304; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 207; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 269.

? *Notothenia tessellata* forma *megalops*, Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, IV, No. 3, p. 25, pl. i, figs. 1–6, pl. ii, figs. 18, 19.

St. WS 582. 1. v. 31. 53° 42′ 30″ S, 70° 55′ W. Hand line, 12 m.: 1 specimen, 160 mm.

St. WS 583. 2. v. 31. 53° 39′ S, 70° 54′ 30″ W. Small beam trawl, 14–78 m.: 20 specimens, 55–125 mm.

7. v. 31. Ringdove Inlet, Wide Channel. Hand line: 1 specimen, 170 mm.

Depth of body $5\frac{1}{4}$ to $6\frac{1}{2}$ in the length, length of head $3\frac{1}{3}$ to $3\frac{2}{3}$. Snout shorter than eye, diameter of which is 3 to $3\frac{3}{5}$ in length of head; interorbital width 7 to 8. Jaws about equal anteriorly; maxillary extending to below anterior $\frac{1}{4}$ of eye; teeth in bands, those of outer row a little enlarged anteriorly; upper surface of head (except snout and praeorbital), cheeks and opercles covered with smooth scales; about 5 rows of scales

between the eyes; 14 to 16 gill-rakers on lower part of anterior arch. Scales on body more or less ctenoid; 62 to 70 in a lateral longitudinal series; 46 to 55 tubular scales in upper lateral line, which nearly reaches the caudal, 6 to 13 in lower lateral line. Dorsal VI[1] 34–37; longest spine $\frac{1}{3}$ to $\frac{2}{5}$ length of head. Anal 32–34. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ length of head, as long as or rather shorter than pelvics, which reach the anal. Caudal rounded; caudal peduncle as long as deep or rather deeper than long, its least depth $\frac{1}{4}$ to $\frac{2}{7}$ length of head. Body with irregular darker cross-bars, which may extend on to the base of

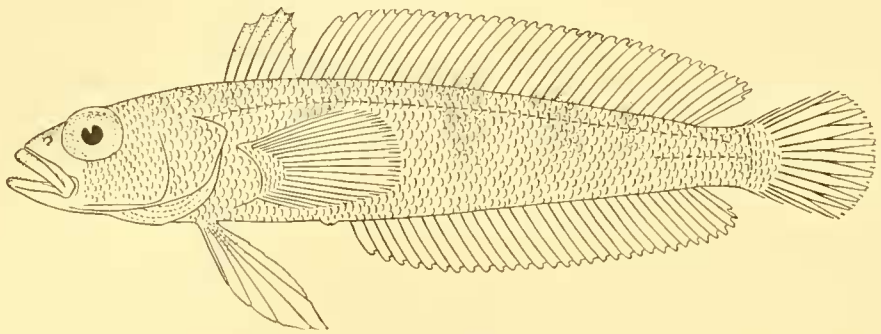

Fig. 38. *Notothenia longipes*. $\times\frac{2}{3}$.

the soft dorsal; spinous dorsal dusky, paler at base; soft dorsal, caudal and anal margined with white; pectoral pale, with a dark vertical bar across the base; pelvics yellowish.

Hab. Straits of Magellan; west coast of Patagonia.

In addition to the above, there are 4 specimens (130–180 mm.) in the British Museum collection from Port Famine and the Messier Channel. This species is difficult to distinguish from *N. wiltoni*, especially in the younger stages, and it is possible that the two forms may eventually prove to be identical. *N. longipes* has a rather more slender body, larger eye, and somewhat longer pelvic fins.

Notothenia squamiceps, Peters.

Notothenia squamiceps, Peters, 1876, *Monatsber. Akad. Berlin*, p. 387; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 441, pl. iii, fig. 2.

? *Notothenia cornucola* (part), Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, IV, No. 3, p. 12.

Notothenia sima, Lönnberg, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 12, pl. i, fig. 1.

St. 53. 12. v. 26. Port Stanley, East Falkland Islands. Hulk of 'Great Britain'. Mussel rake, 0–2 m.: 3 specimens, 80–120 mm.[2]

St. 55. 16. v. 26. Entrance to Port Stanley, East Falkland Islands, 2 cables S 24° E of Navy Point. Small beam trawl, 10–16 m.: 1 specimen, 90 mm.

St. 56. 16. v. 26. Sparrow Cove, Port William, East Falkland Islands, $1\frac{1}{2}$ cables N 50° E of Sparrow Point. Small beam trawl, $10\frac{1}{2}$–16 m.: 3 specimens, 85–95 mm.

Head more or less compressed. Depth of body $3\frac{2}{3}$ to 4 in the length, length of head $3\frac{1}{4}$ to $3\frac{3}{5}$. Snout as long as or rather longer than eye, diameter of which is $4\frac{1}{4}$ to nearly 5 in length of head; interorbital width $3\frac{3}{4}$ to $4\frac{1}{2}$ (narrower in young). Jaws about equal anteriorly; maxillary extending to below anterior $\frac{1}{4}$ or anterior $\frac{1}{3}$ of eye; teeth in bands,

[1] I count 6 spines in all the specimens in the British Museum.

[2] With these specimens is a mass of eggs.

those of the outer row a little enlarged anteriorly; occiput, interorbital region, cheeks and opercles with smooth scales, those between the eyes as large or nearly as large as those on sides of body and on operculum; scales not embedded, extending forward on upper surface of head to opposite middle or anterior parts of eyes; 13 to 16 gill-rakers on lower part of anterior arch. Scales on body ctenoid; 46 to 50 in a lateral longitudinal series; 37 to 40 tubular scales in upper lateral line, which ends below or a little in advance of last ray of dorsal, 7 to 11 in lower lateral line. Dorsal VI–VII (VIII in one example) 27–30; longest spine about $\frac{1}{3}$ length of head. Anal 29–31. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, a little longer than pelvics, which extend to the origin of anal or beyond. Caudal rounded; caudal peduncle $\frac{3}{5}$ to $\frac{2}{3}$ as long as deep, its least depth $\frac{2}{7}$ to $\frac{1}{3}$ length of head. Brownish; uniform or with indistinct darker cross-bars on upper parts of body; often some round pale spots on back and sides; spinous dorsal more or less dusky, plain

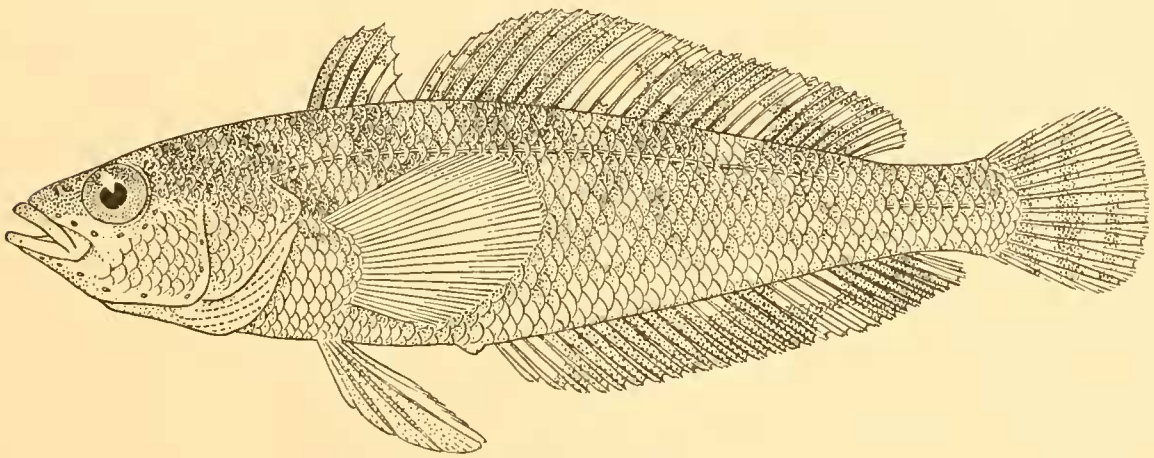

Fig. 39. *Notothenia squamiceps*. $\times 1\frac{1}{2}$.

or with a round dark spot posteriorly; sometimes the greater part of the fin is dark, with a clear area posteriorly; soft dorsal uniform or with broad dark areas separated by narrower clear interspaces; caudal sometimes with dark cross-bars; anal uniform or coloured like the soft dorsal; pectoral yellowish; pelvics partly blackish.

Hab. Patagonia and the Straits of Magellan; Falkland Islands.

In addition to the above, the British Museum has received a small specimen, 45 mm. in total length, from Port Churruca, Magellan, as an exchange from the United States National Museum (U.S.N.M. No. 76883). There seems to be little doubt that Thompson was correct in separating this species from the closely related *N. sima*, and I feel fairly certain that his specimens, as well as those collected by the 'Discovery' Expedition, are referable to Peters' species, which was not previously represented in the British Museum collection. *N. squamiceps* differs from *N. sima* chiefly in having a deeper body, wider interorbital region with larger scales between the eyes, more numerous gill-rakers, and a different coloration.

Notothenia sima, Richardson. "Ouchounaya."

Notothenia sima, Richardson, 1845, *Zool. 'Erebus' and 'Terror'*, Fishes, p. 19, pl. xi, figs. 1, 2; Günther, 1860, *Cat. Fish.*, II, p. 262; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 25; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 303; Boulenger, 1900, *Ann. Mag. Nat. Hist.* (7) VI, p. 53; Boulenger, 1902, *'Southern Cross'*, *Pisces*, p. 183; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 9; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, pp. 240, 269; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 439.

Notothenia cornucola (part), Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, IV, No. 3, p. 12.

Notothenia karlandreae, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 14, pl. iv, fig. 13.

St. 55. 16. v. 26. Entrance to Port Stanley, East Falkland Islands, 2 cables S 24° E of Navy Point. Small beam trawl, 10–16 m.: 2 specimens, 100, 105 mm.

St. 56. 16. v. 26. Sparrow Cove, Port William, East Falkland Islands, $1\frac{1}{2}$ cables N 50° E of Sparrow Point. Small beam trawl, $10\frac{1}{2}$–16 m.: 1 specimen, 80 mm.

Head not compressed. Depth of body 4 to 5 in the length, length of head $3\frac{1}{4}$ to $3\frac{2}{3}$. Snout as long as or rather longer than eye, diameter of which is 4 to 6 in length of head; interorbital width $5\frac{1}{2}$ to nearly 8. Jaws about equal anteriorly or lower a little longer; maxillary extending to below anterior part or middle of eye; teeth in two or three irregular rows, at least anteriorly; sometimes nearly uniserial; teeth of the outer row somewhat enlarged anteriorly; occiput, interorbital region, cheeks and opercles with smooth scales, but those on upper surface of head, and particularly in the interorbital region, often reduced in number and more or less deeply embedded in the skin; scales on upper surface of head much smaller than those on sides of body

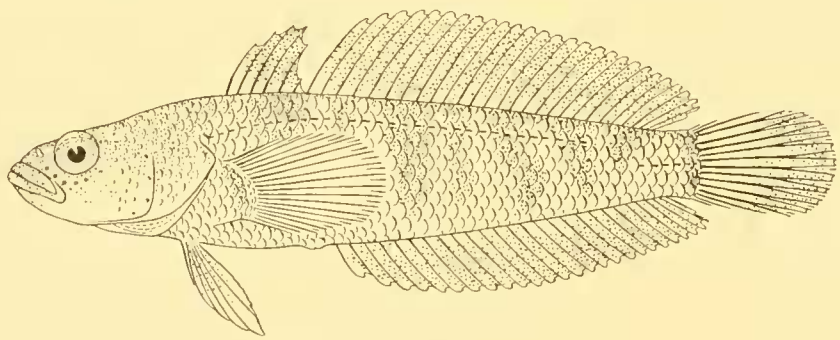

Fig. 40. *Notothenia sima*. × 1.

and on the operculum; 9 to 12 gill-rakers on lower part of anterior arch. Scales on body ctenoid; 40 to 47 in a lateral longitudinal series; 30 to 36 tubular scales in upper lateral line, which ends well in advance of last ray of dorsal, 2 to 12 in lower lateral line. Dorsal VI (rarely V) 27–31; longest spine $\frac{1}{3}$ to $\frac{2}{5}$ length of head. Anal 27–30. Pectoral $\frac{2}{3}$ to $\frac{3}{4}$ length of head, a little longer than pelvics, which extend to the vent or occasionally to the anal fin. Caudal rounded; caudal peduncle not more than $\frac{1}{2}$ as long as deep, its least depth about $\frac{1}{3}$ length of head. Head with some indistinct darker markings; body with irregular dark cross-bars; spinous dorsal mostly covered by a blackish blotch; soft dorsal more or less dusky, except sometimes at base, and with a narrow white margin; anal similar or with more or less prominent oblique stripes;

caudal plain or with darker cross-bars, nearly always with dark markings at its base; pectoral and pelvics plain or more or less tinged with dusky, the former generally with a dark bar across the base.

Hab. Patagonia and the Straits of Magellan; Falkland Islands.

In addition to the above, Mr Bennett has sent many specimens (40–140 mm.) from Stanley Harbour and the Dockyard Jetty, Falkland Islands, taken either in a trap set in $1\frac{1}{2}$ fathoms or in a seine net operated from the shore, in February and November. There are also 24 specimens (60–120 mm.) in the British Museum collection, from the Falklands, Orange Bay and Magellan, including the type of the species and a co-type of *Notothenia karlandreae*.

This species exhibits a remarkable degree of variation in the scaling of the head, but may be readily distinguished from *N. cornucola*, which it closely resembles in appearance, not only by the fully scaled operculum, but also by the number of dorsal spines and number of rays in the soft dorsal, the somewhat larger scales, the narrower and flatter interorbital region, etc. It is said to be very common in the Falkland Islands, and a specimen sent to the British Museum by the late Mr R. Vallentin, taken by him in November, 1909, was found coiled round a bunch of eggs at low tide. Others taken near the end of September also had ripe ova, so that the breeding season would appear to be at a different time to that of *N. squamiceps*.

Notothenia cornucola, Richardson. "Oumouch."

Notothenia cornucola, Richardson, 1845, *Zool. 'Erebus' and 'Terror'*, Fishes, pp. 8, 18, pl. viii, figs. 4, 5, pl. xi, figs. 3, 4; Günther, 1860, *Cat. Fish.*, II, p. 261; Cunningham, *Trans. Linn. Soc. London*, XXVII, p. 470; Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 73; Peters, 1876, *Monatsber. Akad. Berlin*, p. 836; Günther, 1881, *Proc. Zool. Soc.*, p. 20; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 25; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 619; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 301; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, pp. 240, 275; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 436.

Notothenia virgata, Richardson, 1845, *t.c.*, p. 18, pl. xi, figs. 5, 6; Günther, 1860, *Cat. Fish.*, II, p. 262.

Notothenia marginata, Richardson, 1845, *t.c.*, p. 18, pl. xii, figs. 1, 2.

Notothenia cornucola var. *virgata*, Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 25.

Notothenia cornucola var. *marginata*, Vaillant, 1888, *t.c.*, p. 26.

Notothenia cornucola (part), Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, IV, No. 3, p. 12; Delfin, 1901, *Cat. Peces Chile*, p. 85.

Notothenia modesta, Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 302, pl. xx, fig. 3.

Notothenia coriiceps, Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 207; Dollo, 1904, *Rés. Voy. 'Belgica'*, Poiss., p. 79; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), pp. 6, 13; Lönnberg, 1907, *Hamb. Magalh., Sammelr.*, Fische, p. 9; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 89.

St. 52. 5. v. 26. Port William, East Falkland Islands, 7·4 cables N 17° E of Navy Point. Hand line, 17 m.: 1 specimen, 65 mm.

St. 53. 12. v. 26. Port Stanley, East Falkland Islands. Hulk of 'Great Britain'. Mussel rake, 0–2 m.: 1 specimen, 90 mm.

St. 55. 16. v. 26. Entrance to Port Stanley, East Falkland Islands, 2 cables S 24° E of Navy Point. Small beam trawl, 10–16 m.: 1 specimen, 58 mm.

St. 56. 16. v. 26. Sparrow Cove, Port William, East Falkland Islands, $1\frac{1}{2}$ cables N 50° E of Sparrow Point. Small beam trawl, $10\frac{1}{2}$–16 m.: 1 specimen, 65 mm.

St. 222. 22–24. iv. 27. St Martin's Cove, Hermite Island, Cape Horn. Large rectangular net, 30–35 m.: 1 specimen, 74 mm.

Depth of body $3\frac{2}{3}$ to $4\frac{1}{2}$ in the length, length of head 3 to $3\frac{2}{3}$. Snout as long as or a little longer than eye, diameter of which is $3\frac{3}{4}$ (young) to 6 in length of head; interorbital width $4\frac{2}{3}$ to 6. Jaws equal anteriorly; maxillary extending to below anterior part or middle of eye; teeth in 2 to 4 rows in each jaw, at least anteriorly; sometimes uniserial; teeth of the outer row somewhat enlarged anteriorly; usually a few scales behind eye and on upper part of operculum; upper surface of head quite naked; scales between occiput and dorsal fin very small and embedded in the skin; 11 or 12 gill-rakers on lower part of anterior arch. Scales on body ctenoid; 47 to 55 in a lateral longitudinal series; 36 to 42 tubular scales in upper lateral line, which ends below last ray or last 2 or 3 rays of dorsal, 4 to 12 in lower lateral line. Dorsal IV–VI (nearly always V) 31–34; longest spine $\frac{1}{3}$ to $\frac{2}{5}$ length of head. Anal 27–31. Pectoral about $\frac{2}{3}$ length of head, as long as or a little longer than pelvics, which extend to vent or not as far. Caudal rounded; caudal peduncle much deeper than long. Coloration usually rather dark, the body being spotted or marbled with darker, sometimes with irregular cross-bars; sometimes a broad, yellowish-white lateral band, which is more distinct on posterior part of body; cheek with two oblique pale stripes separated by a narrow dark streak, the upper running backwards from the praeorbital, the lower from the mouth; a dark blotch or bar above these stripes, covering the hinder part of the cheek; spinous dorsal with a black blotch; soft dorsal and anal usually dusky, but in the young these fins are paler, and spotted and streaked with brown, or with oblique stripes; both fins with narrow pale margins; caudal with dark cross-bars, becoming indistinct in adults, and with a pale hinder margin; pectorals pale or somewhat dusky, a dark vertical bar across the base; pelvics dusky.

Hab. Patagonia; Falkland Islands; Straits of Magellan; southern Chile, northwards to Chiloe; New Zealand(?).[1]

In addition to the above, Mr Bennett has sent several specimens (35–125 mm.) from Stanley, Falkland Islands, mostly taken under stones between tides or from the "kelp" in March, April, July and November; as well as 6 others (105–130 mm.), collected near the beach at New Island, West Falklands, by Mr Hamilton in February, 1934. There are also 25 specimens (90–140 mm.) in the British Museum collection, from the

[1] The evidence for the occurrence of this species in New Zealand is very slender. There is a single small specimen (60 mm. long) in the British Museum collection labelled "New Zealand. Dr Richardson", but there appears to be no record of such a fish in Richardson's works. The registered number of the specimen is 60.3.19.66, and reference to the original register merely shows that it formed part of a large collection received from India House. I am of the opinion that the locality given is an error. In his Catalogue of the Fishes of New Zealand (1872), Hutton remarks that he did not see any specimens of *N. cornucola*, and he apparently includes this species on the authority of Günther. In 1873 (*Trans. N. Zealand Inst.*, v, p. 262) the same author says that specimens of *N. cornucola* "were brought by Mr Henry Travers from the Chatham Islands, and I also saw it last January in Dunedin". From his brief notes, it seems probable that he had examples of *N. macrocephala*, Günther.

Falklands and the Straits of Magellan, including the types of the species and the types of *N. virgata* and *N. marginata*.

Hussakof records an example collected on 25 May, 1899, which was greatly distended with eggs, and Lönnberg mentions a ripe female caught in the month of September. Assuming that these identifications were correct, this species would seem to have an extended breeding season.

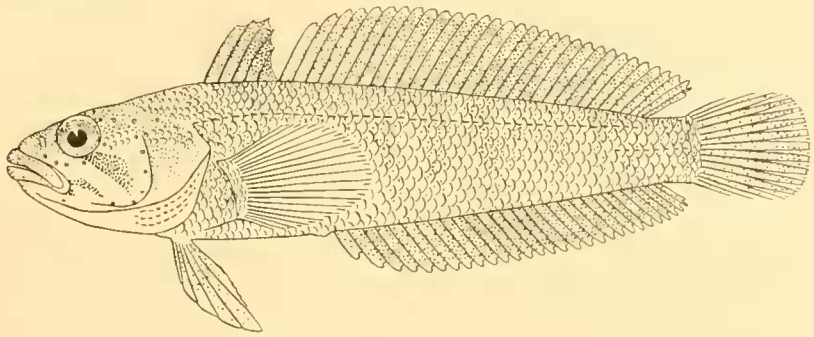

Fig. 41. *Notothenia cornucola*. × 1.

Notothenia elegans, Günther.

Notothenia elegans, Günther, 1880, *Shore Fish. 'Challenger'*, p. 21, pl. xi, fig. C; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) x [xxx], p. 619; Delfin, 1901, *Cat. Peces Chile*, p. 87; Regan, 1913, *Trans. R. Soc. Edinb.*, xlix, p. 274; Thompson, 1916, *Proc. U.S. Nat. Mus.*, l, p. 435.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Islands. Large otter trawl, 105–115 m.: 4 specimens, 80–95 mm.

St. WS 93. 9. iv. 27. 7 miles S 80° W of Beaver Island, West Falkland Islands. Commercial otter trawl, 133–130 m.: 1 specimen, 75 mm.

St. WS 237. 7. vii. 28. 46° 00′ S, 60° 05′ W. Net (7 mm. mesh) attached to back of trawl, 150–256 m.: 1 specimen, 55 mm.

St. WS 767. 19. x. 31. 45° 12′ S, 61° 41′ W. Rectangular net, 98 m.: 4 specimens, 55–75 mm.

St. WS 795. 18. xii. 31. 46° 14′ S, 60° 24′ W. Net (7 mm. mesh) attached to back of trawl, 157–161 m.: 1 specimen, 75 mm.

St. WS 808. 8. i. 32. 49° 40′ 15″ S, 65° 42′ W. Seine net attached to back of trawl, 109–107 m.: 3 specimens, 28–53 mm.

St. WS 836. 3. ii. 32. 53° 05′ 30″ S, 67° 38′ W. Small beam trawl, 64 m.: 6 specimens, 69–103 mm.

St. WS 861. 27. iii. 32. 47° 40′ S, 64° 12′ W. Small beam trawl, 117–124 m.: 1 specimen, 40 mm.

St. WS 863. 28. iii. 32. 49° 05′ S, 64° 09′ W. Small beam trawl, 121–117 m.: 22 specimens, 35–120 mm.

St. WS 867. 30. iii. 32. 51° 10′ S, 64° 15′ 30″ W. Small beam trawl, 150–147 m.: 1 specimen, 80 mm.

St. WS 873. 2. iv. 32. 52° 35′ S, 67° 19′ W. Rectangular net, 93 (–0) m.: 1 specimen, 120 mm.

St. WS 878. 4. iv. 32. 52° 36′ S, 58° 54′ W. Rectangular net, 121 (–0) m.: 11 specimens, 60–90 mm.

Depth of body 6 to 7 in the length, length of head $3\frac{3}{4}$ to $4\frac{1}{4}$. Snout shorter than eye, diameter of which is $3\frac{1}{4}$ to $3\frac{3}{4}$ in length of head; interorbital width 10 to 13. Jaws about equal anteriorly; maxillary extending to below anterior part of eye; teeth in bands in

both jaws, those of the outer row a little enlarged anteriorly; a few scales behind the eye and on the upper part of the operculum; head otherwise naked; 8 to 11 gill-rakers on lower part of anterior arch. Scales on body ctenoid; 46 to 50 in a lateral longitudinal series; 39 to 41 tubular scales in upper lateral line, which ends below or in advance of last ray of dorsal, 4 to 11 in lower lateral line. Dorsal VI 31–33; longest spine $\frac{2}{5}$ to $\frac{2}{3}$ length of head. Anal 30–32. Pectoral $\frac{3}{4}$ to $\frac{7}{8}$ length of head, as long as or a little shorter than pelvics, which extend to vent or beyond. Caudal rounded; caudal peduncle

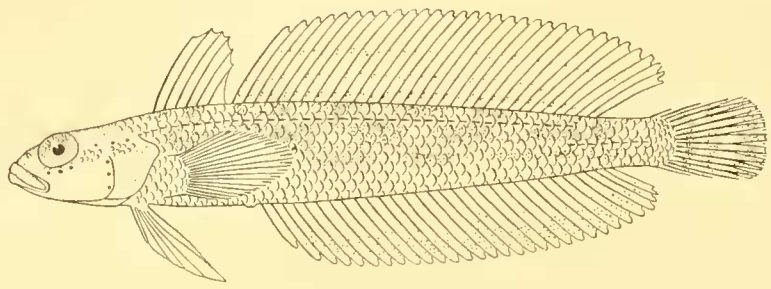

Fig. 42. *Notothenia elegans.* $\times \frac{5}{6}$.

somewhat deeper than long. Sides of body with large dark spots or irregular cross-bars; usually a narrow pale streak running along side below the lateral line; a pale oblique stripe, bordered with darker, sometimes present on the head; mucous pores on head often black; spinous dorsal pinkish at its extremity; soft dorsal with series of small dark spots, sometimes united to form longitudinal stripes; caudal with 2 or 3 indistinct cross-bars; anal, pectoral and pelvics uniformly pale.

Hab. Patagonian-Falklands region; Straits of Magellan.

In addition to the above, there are 2 specimens (both 95 mm. long) in the British Museum collection—types of the species.

Notothenia macrocephala, Günther.

? *Gadus magellanicus*, Schneider [*ex* Forster MS.], 1801, in Bloch, *Syst. Ichth.*, p. 10.

? *Notothenia magellanica*, Richardson, 1844, *Zool. 'Erebus' and 'Terror'*, Fishes, p. 9.

Notothenia macrocephala, Günther, 1860, *Cat. Fish.*, II, p. 263; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 470; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 27, pl. iii, fig. 2; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 618; Smitt, 1897, *Bih. Sv. Vet.-Akad. Handl.*, XXIII, iv, No. 3, p. 9, pl. iii, figs. 23–26; Delfin, 1901, *Cat. Peces Chile*, p. 84; Boulenger, 1900, *Ann. Mag. Nat. Hist.* (7) VI, p. 53; Boulenger, 1902, *'Southern Cross'*, Pisces, p. 184; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 207; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 10; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 277; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 89; Waite, 1916, *Sci. Rep. Australas. Antarct. Exped.*, Ser. C, III (1), p. 66, pl. iii, fig. 2, text-fig. 16; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 431; Phillipps, 1927, *N. Zealand Mar. Dept. Fish. Bull.*, I, p. 44; Fowler, 1927, *Proc. Acad. N.S. Philad.*, LXXVIII, p. 283.

? *Notothenia cornucola*, Hutton, 1873, *Trans. N. Zealand Inst.*, V, p. 262.

Notothenia maoriensis, Haast, 1873, *t.c.*, p. 276, pl. xvi.

Notothenia angustata, Hutton, 1875, *Ann. Mag. Nat. Hist.* (4) XVI, p. 315; Hutton, 1876, *Trans. N. Zealand Inst.*, VIII, p. 213.

Notothenia hassleriana, Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 69, pl. vi (left-hand fig.); Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 303.

Notothenia antarctica, Peters, 1876, *Monatsber. Akad. Berlin*, p. 837; [Studer], 1889, *Forschungsr. S.M.S. 'Gazelle'*, III, pl. xix, fig. 1.

Notothenia arguta, Hutton, 1879, *Trans. N. Zealand Inst.*, XI, p. 339.

Notothenia porteri, Delfin, 1899, *Revist. Chil.*, III, p. 117.

St. 63. 22. v. 26. 48° 50′ S, 53° 56′ W. Hand line, 0 m.: 8 specimens, 60–90 mm.

St. 222. 22–24. iv. 27. St Martin's Cove, Hermite Island, Cape Horn. Large fish trap, 30–35 m.: 1 specimen, 205 mm.

St. 229. 4. v. 27. 53° 40′ S, 61° 10′ W. 1 m. tow-net, horizontal, 46 (–0) m.: 1 specimen, 75 mm.

Depth of body 3 to 4 in the length, length of head $3\frac{1}{5}$ to $3\frac{3}{4}$. Snout (except in young) longer than eye, diameter of which is 3 (young) to 6 in length of head; interorbital width $2\frac{1}{2}$ to $3\frac{1}{2}$. Jaws equal anteriorly; maxillary extending to below anterior $\frac{1}{4}$ or anterior $\frac{1}{3}$ of eye; teeth in one or two series anteriorly in both jaws, always uniserial laterally; no distinct canines; a few imbricated scales behind the eye and on the upper part of the operculum; upper surface of head naked, papillose; 10 to 13 gill-rakers on lower part of anterior arch. Scales on body generally smooth; 50 to 60 in a lateral longitudinal series; 36 to 46 tubular scales in upper lateral line, which ends below posterior rays of dorsal, 6 to 14 in lower lateral line. Dorsal III–VI[1] 29–31; longest spine $\frac{1}{5}$ to $\frac{2}{7}$ length of head. Anal 22–25; length of base $2\frac{1}{3}$ to $2\frac{2}{3}$ in that of fish (without caudal). Pectoral $\frac{2}{3}$ to $\frac{5}{6}$ length of head, much longer than pelvics, which extend $\frac{3}{5}$ to $\frac{2}{3}$ of the distance from their base to the vent. Caudal emarginate in young, becoming truncate or even slightly rounded in adults; caudal peduncle usually somewhat longer than deep. Greyish olive above, becoming yellowish below; more or less distinct longitudinal stripes or series of spots on the sides; traces of oblique stripes below the eye; spinous dorsal dark; soft dorsal dusky, sometimes reticulated, and with a narrow pale margin; caudal, pectoral and pelvics usually more or less dusky. The young are more silvery, especially on the lower parts of the head and body, and the fins are much paler.

Hab. Patagonia; Falkland Islands; Straits of Magellan; coast of Chile, northwards to Talcahuano; Kerguelen; New Zealand; Auckland Island; Campbell Island; Macquarie Island.

In addition to the above, Mr Bennett has sent 8 specimens (55–220 mm.) from Stanley, Falkland Islands, taken in shallow water with hook or seine net. There are also 15 specimens (40–350 mm.) in the British Museum collection from the Falklands, Straits of Magellan, Kerguelen, New Zealand and Campbell Island, including the type of the species and the types of *N. arguta* and *N. angustata*.

Schneider's *Gadus magellanicus* was based upon the MS. and drawing of Forster (MS. IV, 46). The latter is a rough sketch but seems to represent an undoubted *Notothenia*. Since the number of anal rays is given by Schneider as 25, it seems probable that Forster's fish belonged either to this species or to the next, as all other species of *Notothenia* from the Magellan region have 27 to 35 anal rays. Thompson has expressed

[1] Of 25 specimens from the Patagonian-Falklands region, 1 has 3 spines, 16 have 4, 7 have 5 and 1 has 6.

doubt as to the identity of *N. macrocephala* with species from Kerguelen and New Zealand, particularly on account of the wide range of variation in the number of spines in the dorsal fin (III–VI). Comparison of Magellan and New Zealand material leaves no doubt that the same species is found in both regions, and two young individuals collected by the 'Challenger' at Kerguelen agree closely with young from the Falklands. It seems probable that this and the following species are not so demersal or littoral in their habits as most of the other species, and that the silvery young are mainly pelagic.

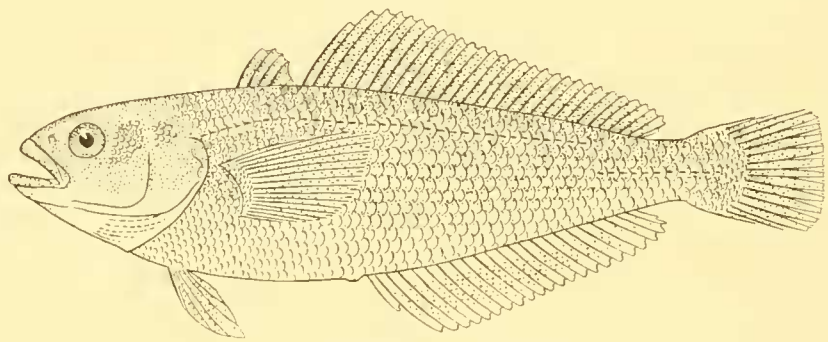

Fig. 43. *Notothenia macrocephala*. $\times \frac{1}{2}$.

In life this fish is blue-grey or golden-brown above, shading away to golden-yellow or cream on the belly; the branchiostegal membranes are bright orange-yellow; the dorsal fins are blue-grey, the other fins grey. It grows to a length of considerably more than a foot, and is known locally in the Falklands as "Yellow-belly". Mr Bennett notes that it is a good fish for the table, although seldom used for food. It stays later in the Falklands than the other species of *Notothenia*, and has been found to be abundant as late as 25 April.

Notothenia microlepidota, Hutton.

Notothenia microlepidota, Hutton, 1876, *Trans. N. Zealand Inst.*, VIII, p. 213; Waite, 1909, *Subantarctic Isl. N. Zealand, Pisces*, p. 590, fig.; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 277.

Notothenia parva, Hutton, 1879, *Trans. N. Zealand Inst.*, XI, p. 339.

Notothenia latifrons, Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 434, pl. iii, fig. 1.

Notothenia patagonica, MacDonagh, 1931, *Not. Prelim. Mus. La Plata*, I, p. 100; MacDonagh, 1934, *Rev. Mus. La Plata*, XXXIV, p. 84, pl. x, figs. 2, 3, pl. xi, figs. 1, 2, pl. xii, text-figs.

Depth of body about 4 in the length, length of head $3\frac{1}{2}$. Snout longer than eye, diameter of which is about 6 in length of head; interorbital width $3\frac{2}{3}$. Lower jaw very little longer than upper; maxillary extending to a little beyond middle of eye; teeth in the upper jaw in a band, which becomes narrower at the sides, those of the lower jaw in a band anteriorly, uniserial laterally; teeth of the outer series in both jaws enlarged, those in front more or less canine-like; sides of head mostly naked, some imbricated scales behind the eye and on the upper part of the operculum; upper surface of head naked, papillose; 13 gill-rakers on lower part of anterior arch. Scales on body ciliated, rough to the touch; about 58 in a lateral longitudinal series; 57 tubular scales in upper

lateral line, which ends below last ray of dorsal, 12 in lower lateral line. Dorsal V (VI) 29; longest spine less than $\frac{1}{3}$ length of head. Anal 24; length of base $2\frac{1}{2}$ in that of fish (without caudal). Pectoral nearly $\frac{2}{3}$ length of head, a little longer than pelvics, which extend nearly $\frac{2}{3}$ of the distance from their base to the vent. Caudal rounded; caudal peduncle deeper than long. Brownish above, with traces of darker markings, paler beneath; sides of head reticulated; fins more or less spotted.

Hab. East coast of Patagonia; Straits of Magellan; New Zealand; Auckland Island; Campbell Island.

The above description is based upon a paratype of *Notothenia patagonica*, 270 mm. in total length, presented to the British Museum by Mr E. J. MacDonagh. Comparison of this specimen with authentic examples of *N. microlepidota* from New Zealand reveals no important differences, and I have no doubt that the two species are synonymous. *N. latifrons* was described from 3 young specimens from Sandy Point and Laredo Bay, the holotype being 63 mm. in total length (U.S.N.M. No. 76854), and is almost certainly identical with the New Zealand species, as was suggested by Regan (1916, *Ann. Mag. Nat. Hist.*, Ser. 8, XVIII, p. 379). There is, thus, a second species common to the Patagonian and Antipodes regions. In 4 examples from the Antipodes the number of gill-rakers on the lower part of the anterior arch varies from 11 to 13.

Genus Dissostichus, Smitt

Dissostichus, Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 3. Type *D. eleginoides*, Smitt.

This genus is closely related to *Notothenia*, but differs in the form of the dentition and in the longer snout. It may also be distinguished from nearly all the species of *Notothenia* by the smaller scales and by the very long lower lateral line.

Dissostichus eleginoides, Smitt.

1898, *t.c.*, p. 4, pl. i, figs. 1–11; Delfin, 1901, *Cat. Peces Chile*, p. 83; Vaillant, 1907, *Expéd. Antarct. Franç.*, Poiss., p. 36; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 279; Devincenzi, 1924, *Anal. Mus. Montevideo* (11) 1 (5), p. 264.

St. WS 75. 10. iii. 27. 51° 01′ 30″ S, 60° 31′ W. Commercial otter trawl, 72 m.: 1 specimen, 130 mm.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 330 mm.

St. WS 98. 18. iv. 27. 49° 54′ 15″ S, 60° 35′ 30″ W. Commercial otter trawl, 173–171 m.: 2 specimens, 295, 320 mm.

St. WS 245. 18. vii. 28. 52° 36′ S, 63° 40′ W. Commercial otter trawl, 304–290 m.: 2 specimens, 445, 900 mm.

St. WS 839. 5. ii. 32. 53° 30′ 15″ S, 63° 29′ W. Commercial otter trawl, 403–434 m.: 2 specimens, 630, 640 mm.

Depth of body $4\frac{4}{5}$ to more than 6 in the length, length of head $2\frac{7}{8}$ to 3. Snout $1\frac{3}{5}$ times to nearly twice as long as eye, diameter of which is $5\frac{1}{2}$ to $6\frac{1}{2}$ in length of head; interorbital width $4\frac{1}{2}$ to 5. Lower jaw strongly projecting; maxillary extending to below middle or posterior part of eye; teeth biserial in upper jaw, those of the outer row

enlarged, spaced, canine-like; a group of stronger canine teeth on each praemaxillary; teeth in lower jaw uniserial, spaced, canine-like; upper surface of head (except snout and praeorbital), cheeks and opercles covered with small scales; some of the mucous pores on the head enlarged, situated at the ends of elongate naked areas symmetrically arranged on upper surface of head, on praeorbital and on suborbitals; about 11 or 12 small spinate gill-rakers on lower part of anterior arch. Scales on body more or less smooth; 110 to 120 in a lateral longitudinal series; about 95 tubular scales in upper lateral line, which extends to below posterior part of dorsal or beyond; about 64 in

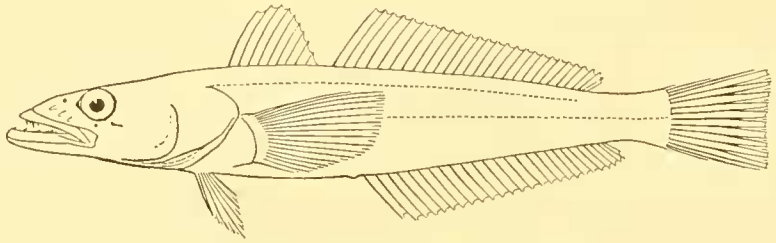

Fig. 44. *Dissostichus eleginoides.* $\times \frac{1}{3}$.

lower lateral line, which extends forward to or nearly to pectoral fin. Dorsal IX–X 26–29. Anal 26–30. Pectoral $\frac{3}{5}$ to nearly $\frac{3}{4}$ length of head, much longer than the pelvics, which do not nearly reach the vent. Caudal truncate or a little emarginate; caudal peduncle longer than deep. More or less uniformly brownish, or with indistinct darker markings; spinous dorsal dusky distally.

Hab. Coast of Argentina; Patagonian-Falklands region; Straits of Magellan; Graham Land.

This species was previously unrepresented in the British Museum collection. I have dissected the shoulder girdle in one of the above specimens, and find the arrangement of the hypercoracoid, hypocoracoid, and radials very similar to that of *Notothenia*.

Genus Eleginops, Gill

Eleginus (*non* Fischer, 1813), Cuvier and Valenciennes, 1830, *Hist. Nat. Poiss.*, v, p. 158; Günther, 1860, *Cat. Fish.*, II, p. 247. Type *E. maclovinus*, Cuvier and Valenciennes.

Eleginops, Gill, 1862, *Proc. Acad. N.S. Philad.* (1861), p. 522; Gill, 1891, *Proc. U.S. Nat. Mus.*, XIV, p. 305; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 279. Type *Aphritis undulatus*, Jenyns.

This genus differs from *Notothenia* in the rather small mouth, in the complete absence of the lower lateral line, and in the shape of the pectoral fin.

Eleginops maclovinus (Cuvier and Valenciennes). "Hiamouch"; "Róbalo."

Eleginus maclovinus, Cuvier and Valenciennes, 1830, *Hist. Nat. Poiss.*, v, p. 158, pl. cxv; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 186; Günther, 1860, *Cat. Fish.*, II, p. 247; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 469; Steindachner, 1876, *SitzBer. Akad. Wiss. Wien*, LXXII (1), p. 65; Günther, 1880, *Shore Fish. 'Challenger'*, p. 21; Günther, 1881, *Proc. Zool. Soc.*, p. 20; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 28; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 616; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 64; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*,

xxiv, iv, No. 5, p. 23; Steindachner, 1898, *Zool. Jahrb.*, Suppl. iv, p. 299; Boulenger 1900, *Ann. Mag. Nat. Hist.* (7) vi, p. 52; Delfin, 1901, *Cat. Peces Chile*, p. 101.

Atherina macloviana, Lesson, 1830, *Voy.* '*Coquille*', Zool., Poiss., Atlas, pl. xvii.

Eleginus chilensis, Cuvier and Valenciennes, 1833, *Hist. Nat. Poiss.*, ix, p. 480; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. ii, p. 187, pl. iii, fig. 1; Günther, 1860, *Cat. Fish.*, ii, p. 247.

Aphritis undulatus, Jenyns, 1842, *Zool.* '*Beagle*', Fish., p. 160, pl. xxix, fig. 1; Guichenot, 1848–9, *t.c.*, p. 168; Günther, 1860, *t.c.*, p. 243; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) x [xxx], p. 616.

Aphritis porosus, Jenyns, 1842, *t.c.*, p. 162; Günther, 1860, *t.c.*, p. 243.

Eleginus falklandicus, Richardson, 1845, *Zool.* '*Erebus*' *and* '*Terror*', Fishes, p. 30, pl. xx, figs. 1–3.

Eleginus magellani, Sauvage, 1880, *Bull. Soc. Philom. Paris* (7) iv, p. 223.

Phricus porosus, Berg, 1895, *Anal. Mus. Nac. B. Aires*, iv, p. 65.

Eleginops maclovinus, Dollo, 1904, *Rés. Voy.* '*Belgica*', Poiss., p. 80; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 11; Regan, 1913, *Trans. R. Soc. Edinb.*, xlix, p. 279; Thompson, 1916, *Proc. U.S. Nat. Mus.*, l, pp. 424, 467.

St. WS 586. 8. v. 31. 48° 27′ 30″ S, 74° 23′ 30″ W. Hand line, 22 m.: 1 specimen, 320 mm.

St. 724. 16. xi. 31. Fortescue Bay, Magellan Straits. Seine net, 0–5 m.: 3 specimens, 160–180 mm.

Depth of body $4\frac{1}{4}$ to $5\frac{1}{2}$ in the length, length of head $3\frac{1}{4}$ to 4. Snout (except in very young) longer than eye, diameter of which is $4\frac{1}{2}$ (young) to 8 in length of head; interorbital width 3 to 5. Lower jaw a little shorter than upper; maxillary just reaching vertical from anterior margin of eye in the young, but not in the adult; teeth in bands in both jaws; occiput, interorbital region, cheeks and opercles scaled; mucous pores on head associated with elongate naked areas as in *Dissostichus*; 14 or 15 gill-rakers on lower part of anterior arch. Scales on body ctenoid; about 60 in a lateral longitudinal series, and 65 in the lateral line, which nearly reaches the caudal fin. Dorsal VIII or IX 24–26. Anal 22–24. Pectoral obliquely truncated, with the upper rays longest, nearly as long as head; much longer than pelvics, which do not nearly reach the vent. Caudal truncate in the young, a little emarginate in the adult. Brownish or greyish above, paler below; body uniform, or spotted and marbled with darker; dorsal and caudal fins more or less dusky; anal yellowish-white; pectorals and pelvics yellowish, their distal parts sometimes dusky.

Hab. Coasts of Argentina, Patagonia and Chile;[1] Falkland Islands.

In addition to the above, Mr Bennett has sent 6 specimens (65–290 mm.), mostly from Weir Creek, Stanley, Falkland Islands, taken with a seine net in March, November and December. There are also about 25 specimens (120–450 mm.) in the British Museum collection, from various localities, including the types of *Aphritis undulatus*, *A. porosus* and *Eleginus falklandicus*. There are 2 fine specimens (300 and 320 mm.) from near Talcahuano, Chile, received from Mr Cavendish Bentinck.

This fish is one of the commonest of those of the Falklands, and is known locally as "Mullet". It grows to a length of about 2 ft. and a weight of 15 lb., but, as the flesh is often very muddy in taste, it is not a first-class fish for the table, although commonly

[1] This species extends northwards to the Rio Plata on the east coast and to northern Chile on the west coast.

used for food. Mullet enter sandy bays, creeks and estuaries in numbers, and are said to be caught by men entering the water and driving them ashore. Mr Bennett notes that it is a fish of rapid movement, fond of basking in quiet bays during sunshine, and becoming most active in the last few hours of the rising tide. As the tide rises the fish run into very shallow water, even up the freshwater streams, and are often isolated there until the next high tide.

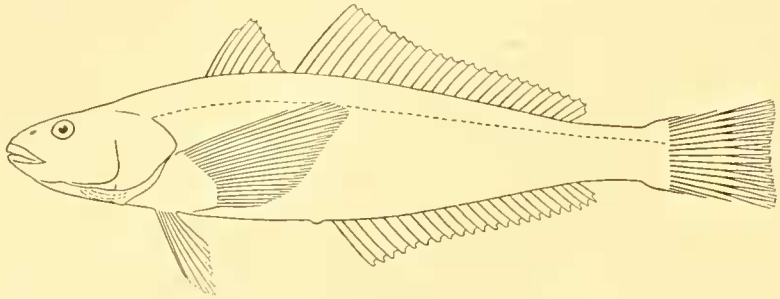

Fig. 45. *Eleginops maclovinus.* $\times \frac{1}{3}$.

Genus Harpagifer, Richardson

Harpagifer, Richardson, 1844, *Zool. 'Erebus' and 'Terror'*, Fishes, p. 11; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 280. Type *Batrachus bispinis*, Schneider.

This genus differs from *Notothenia* in the naked body, the broad union of the gill-membranes to the isthmus, the hooked operculum, and the development of the operculum and suboperculum as strong spines.

Harpagifer bispinis (Schneider).

Batrachus bispinis, Schneider [*ex* Forster MS.], 1801, in Bloch, *Syst. Ichth.*, p. 45.

Callionymus bispinis, Forster, 1844, *Anim. Mar. Aust.*, p. 360.

Harpagifer bispinis, Richardson, 1844, *Zool. 'Erebus' and 'Terror'*, Fishes, pp. 11, 19, pl. vii, figs. 1–3, pl. xii, figs. 8, 9; Günther, 1860, *Cat. Fish.*, II, p. 263; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 470; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 23; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 620; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 17; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 306; Delfin, 1901, *Cat. Peces Chile*, p. 87; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 8; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 11; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 280; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 90.

Harpagifer palliolatus, Richardson, 1844, *t.c.*, p. 20, pl. xii, figs. 5–7.

St. WS 89. 7. iv. 27. 9 miles N 21° E of Arenas Point Light, Tierra del Fuego. Commercial otter trawl, 23–21 m.: 2 specimens, 55, 67 mm.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 3 specimens, 45–48 mm.

Dorsal III–V 21–26. Anal 16–21. Coloration very variable, the body generally with dark bars or blotches.

Hab. Patagonia; Falkland Islands; Straits of Magellan; Graham Land; South Georgia; South Orkneys; Marion Islands; Kerguelen; Macquarie Island.

In addition to the above, Mr Bennett has sent 24 specimens (48–95 mm.) from Stanley, Falkland Islands, taken under stones between tide-marks from September to December; as well as 3 others (60–70 mm.) collected near the beach at New Island, West Falklands, by Mr Hamilton in February, 1934. There are also numerous specimens up to 100 mm. in total length in the British Museum collection, from various localities, including the type of *Harpagifer palliolatus*.

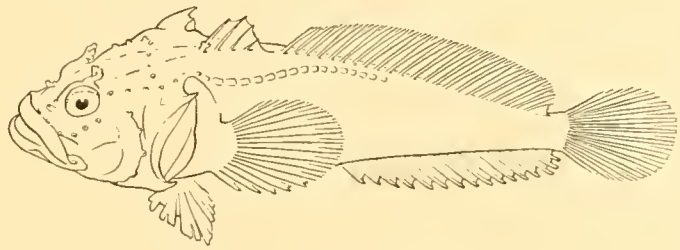

Fig. 46. *Harpagifer bispinis*. × 1.

This is mainly a shore fish, occurring in tide pools and under rocks, and also to be found in the "kelp" in shallow water. Hussakof records an individual, 61 mm. long, which was collected at Tierra del Fuego on 30 March, and was distended with eggs, each of which measured about 1·5 mm. in diameter.

CHAENICHTHYIDAE

Champsocephalus esox (Günther). "Tsataki."

Chaenichthys esox, Günther, 1861, *Ann. Mag. Nat. Hist.* (3) VII, p. 89; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 469; Günther, 1881, *Proc. Zool. Soc.*, p. 20; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 27; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 616; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 7; Delfin, 1901, *Cat. Peces Chile*, p. 102.

Champsocephalus esox, Gill, 1862, *Proc. Acad. N.S. Philad.* (1861), p. 510; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 10; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 285, pl. x, fig. 1.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Islands. Large otter trawl, 105–115 m.: 21 specimens, 150–190 mm.

St. WS 73. 6. iii. 27. 51° 01′ S, 58° 54′ W. Commercial otter trawl, 121 m.: 6 specimens, 140–290 mm.

St. WS 75. 10. iii. 27. 51° 01′ 30″ S, 60° 31′ W. Commercial otter trawl, 72 m.: 22 specimens, 140–220 mm.

St. WS 83. 24. iii. 27. 14 miles S 64° W of George Island, East Falkland Islands. Commercial otter trawl, 137–129 m.: 6 specimens, 303–330 mm.

St. 724. 16. xi. 31. Fortescue Bay, Magellan Straits. Seine net, 0–5 m.: 2 specimens, 100, 130 mm.

St. WS 823. 19. i. 32. 52° 14′ 30″ S, 60° 01′ W. Commercial otter trawl, with net (7 mm. mesh) attached, 80–95 m.: 5 specimens, 120–180 mm.

St. WS 834. 2. ii. 32. 52° 57′ 45″ S, 68° 08′ 15″ W. Net (7 mm. mesh) attached to back of trawl, 27–38 m.: 1 specimen, 105 mm.

Depth of body 7 to 8 in the length, length of head $2\frac{4}{5}$ to $3\frac{1}{3}$. Snout as long as or a little longer than postorbital part of head; diameter of eye $5\frac{1}{4}$ (young) to $7\frac{1}{2}$ in length

of head; interorbital width $3\frac{1}{2}$ to 5. Maxillary extending to below anterior part or middle of eye. Dorsal IX–X 32–37. Anal 31–35. Body with dark cross-bars, or irregularly mottled or blotched with darker.

Hab. Patagonian-Falklands region; Straits of Magellan.

In addition to the above, Mr Bennett has sent 3 specimens (195–250 mm.) from Stanley, Falkland Islands. There are also 6 specimens (145–330 mm.) in the British

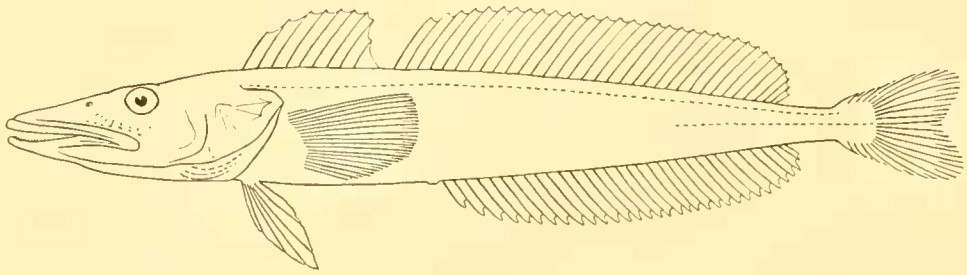

Fig. 47. *Champsocephalus esox.* $\times \frac{2}{5}$.

Museum collection from various localities in Patagonia and the Straits of Magellan, as well as the type of the species, a stuffed skin (340 mm.) from Port Famine.

Dr R. O. Cunningham has recorded that in life the sides of this fish are barred with greyish black and fine iridescent purple. Mr Bennett notes that it is not common in the Falklands, but is occasionally taken from January to March. Its local name is "Pike", and, although rarely eaten, is said to be a good food-fish.

GEMPYLIDAE

Thyrsites atun (Euphrasen).

Scomber atun, Euphrasen, 1791, *K. Vet. Acad. Nya. Handl.*, XII, p. 315.

Thyrsites atun, Cuvier and Valenciennes, 1831, *Hist. Nat. Poiss.*, VIII, p. 196, pl. ccxix; Valenciennes, 1850, in Cuvier, *R. Anim.*, Disciples Ed., Poiss., pl. xlix, fig. 1; Günther, 1860, *Cat. Fish.*, II, p. 350; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 29; Delfin, 1901, *Cat. Peces Chile*, p. 50; Lahille, 1913, *Anal. Mus. Nac. B. Aires*, XXIV, p. 14, pl. v, fig. 1; McCulloch, 1921, *Rec. Austral. Mus.*, XIII, p. 139, pl. XXIV, fig. 2; Barnard, 1927, *Ann. S. Afric. Mus.*, XXI, p. 788, pl. xxix, fig. 4; Phillipps, 1927, *N. Zealand Mar. Dept. Fish. Bull.*, I, p. 47.

Thyrsites chilensis, Cuvier and Valenciennes, 1831, *Hist. Nat. Poiss.*, VIII, p. 204; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 226.

Thyrsites altivelis, Richardson, 1839, *Proc. Zool. Soc.*, VII (78), p. 99.

St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 90 m.: 1 specimen, 920 mm.

St. WS 812. 10. i. 32. From 51° 16′ 15″ S, 68° 52′ W to 51° 19′ 45″ S, 68° 40′ W. Commercial otter trawl, 43–84 m.: 5 specimens, 900–950 mm.

Hab. South Africa; Tristan da Cunha; Argentina, Patagonian-Falklands region, Chile; southern Australia; New Zealand.

In addition to the above, Mr Bennett has sent the head of a specimen caught in East Falkland Island in February, 1927. This fish was taken in the Murrell River at Island Pass, a freshwater stream at some distance from the sea.

This is the species known in South Africa as "Snoek", in Australia and New Zealand as "Barracouta", and in Chile as "Sierra".

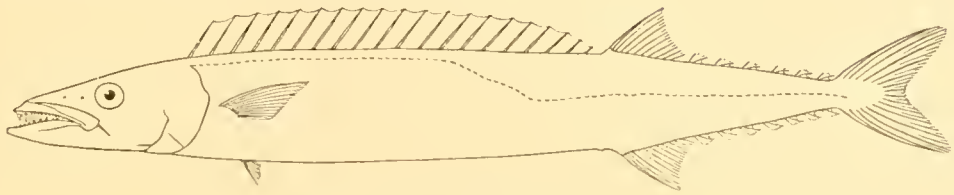

Fig. 48. *Thyrsites atun.* $\times \frac{1}{6}$.

SCOMBRIDAE

Genus Gasterochisma, Richardson

1845, *Ann. Mag. Nat. Hist.*, xv, p. 346; Richardson, 1846, *Zool.* '*Erebus*' *and* '*Terror*', Fishes, p. 60; Regan, 1902, *Ann. Mag. Nat. Hist.* (7) x, p. 120. Type *G. melampus*, Richardson.

Lepidothynnus, Günther, 1889, *Pelagic Fish.* '*Challenger*', p. 15. Type *L. huttoni*, Günther.

Chenogaster, Lahille, 1903, *Anal. Mus. Nac. B. Aires*, ix, p. 375; Lahille, 1905, *Anal. Mus. Nac. B. Aires*, xi, p. 461. Type *C. holmbergi*, Lahille.

The systematic position of this genus is clearly with the Scombridae rather than with the Stromateidae, as has been shown by Regan. There is probably only a single species.

Gasterochisma melampus, Richardson.

Gasterochisma melampus, Richardson, 1845, *Ann. Mag. Nat. Hist.*, xv, p. 346; Richardson, 1846, *Zool.* '*Erebus*' *and* '*Terror*', Fishes, p. 60, pl. xxxvii, figs. 1–3; Regan, 1902, *Ann. Mag. Nat. Hist.* (7) x, p. 120; Stead, 1907, *Add. Fish-Fauna N.S. Wales* [1], p. 21, pl. vi; Waite, 1913, *Trans. N. Zeal. Inst.*, xlv, p. 220, pl. viii; McCulloch, 1922, *Austral. Zool.*, ii, p. 104, pl. xxxiii, fig. 287*a*; Phillipps, 1927, *N. Zealand Mar. Dept. Fish. Bull.*, i, p. 45.

Lepidothynnus huttoni, Günther, 1889, *Pelagic Fish.* '*Challenger*', p. 15, pl. vi, fig. A.

Chenogaster holmbergi, Lahille, 1903, *Anal. Mus. Nac. B. Aires*, ix, p. 375; Lahille, 1905, *Anal. Mus. Nac. B. Aires*, xi, p. 461, pl. i.

Gasterochisma boulengeri, Lahille, 1913, *Anal. Mus. Nac. B. Aires*, xxiv, p. 8, pls. iii, iv, text-fig. 2.

Hab. Southern Atlantic and Pacific Oceans.

No specimens of this interesting oceanic species were obtained by the Discovery Expedition, but Mr Hamilton has sent portions of a damaged skeleton from the Falkland Islands, together with a photograph of a stuffed specimen, nearly 4 feet in length, in the museum at Stanley. This specimen is from West Point Island. There are also some scales, sent to the British Museum by Mr R. Vallentin in 1911, taken from a fish from the north-west corner of West Falklands. The type of *G. melampus* is about 200 mm. in total length, that of *G. boulengeri* was 725 mm., that of *Chenogaster holmbergi* was about 1550 mm., and that of *Lepidothynnus huttoni* was about 1680 mm. These specimens form a complete series, and I have no doubt that they represent different stages in the growth of a single species. A similar change in the size of the pectoral, and particularly of the pelvic fins, with age, is met with in such genera as *Nomeus*, *Psenes*, *Leirus*, etc.

ZOARCIDAE

In 1908, Lahille (*Anal. Mus. Nac. B. Aires*, XVI, p. 403) published an account of the genera and species found on the coast of Argentina, but, as his paper was omitted from the Zoological Record, it was overlooked by Regan when he prepared a revision of the South American and Antarctic Zoarcidae in 1913 (*Trans. R. Soc. Edinb.*, XLIX, p. 241). In view of the very extensive material obtained by the Discovery Expedition, it has seemed desirable to prepare a new revision of the species from the Patagonian region, leaving those of South Georgia and the Antarctic to be dealt with in the next part of this report.

Key to the Patagonian genera

I. Pelvic fins present.
  A. Snout and lower jaw without fringes.
    1. Origin of dorsal fin well behind base of pectoral; gill-opening cleft downward nearly to lower end of base of pectoral; eye large, $3\frac{1}{3}$ in head ... *Ophthalmolycus*.
    2. Origin of dorsal fin above base or anterior part of pectoral; eye smaller, more than $3\frac{1}{2}$ in head (except in young).
      a. Gill-opening cleft downward at least to middle of base of pectoral.
        (i) Gill-opening cleft downward almost or quite to lower end of base of pectoral; head not depressed; canine teeth usually present, at least in lower jaw *Iluocoetes*.
        (ii) Gill-opening cleft downward only to middle of base of pectoral; head more or less depressed; no canine teeth ... ... *Austrolycus*.
      b. Gill-opening small, above the pectoral; head not depressed ... *Phucocoetes*.
  B. Snout and lower jaw with dermal fringes.
    1. Teeth conical, in 2 or more series in both jaws; small scales embedded in the skin.
      a. Gill-opening almost entirely above the pectoral; palate toothless *Crossostomus*.
      b. Gill-opening cleft downward to middle of base of pectoral; teeth on palate *Pogonolycus*.
    2. Teeth incisor-like, uniserial; palate toothless; skin naked; gill-opening cleft downward to middle of base of pectoral ... ... *Platea*.

II. No pelvic fins.
  A. Gill-opening cleft downward to middle of base of pectoral ... ... *Maynea*.
  B. Gill-opening above base of pectoral ... ... *Melanostigma*.

Genus Ophthalmolycus, Regan

1913, *Trans. R. Soc. Edinb.*, XLIX, p. 243. Type *Lycodes macrops*, Günther.

Form elongate, compressed. Mouth subterminal; teeth rather slender and acute, in about 3 series in both jaws; no canines; 3 teeth on vomer and 2 near anterior end of each palatine. Gill-opening rather wide, cleft downward nearly to lower end of base of pectoral. Dorsal origin well behind head; pelvic fins present.

Ophthalmolycus macrops (Günther).

Lycodes macrops, Günther, 1880, *Shore Fish. 'Challenger'*, p. 21, pl. xi, fig. B.
Ophthalmolycus macrops, Regan, 1913, *t.c.*, p. 243.

Depth of body $11\frac{1}{2}$ in the length, length of head $5\frac{1}{3}$. Diameter of eye $3\frac{1}{3}$ in length of head and 7 times interorbital width. Maxillary nearly reaching vertical from posterior

margin of eye. About 90 rays in the dorsal fin, 80 in the anal, and 10 in the caudal. Origin of dorsal above posterior $\frac{1}{4}$ of pectoral; origin of anal a head-length behind the head. Pectoral less than $\frac{1}{2}$ the length of head. Yellowish; 9 broad dark-brown cross-bars on back, extending on to dorsal fin; a series of brown spots on the side, alternating with the bars; a brown band from eye to operculum.

Hab. Straits of Magellan, 40 to 140 fathoms.

Known only from the type, 135 mm. in total length.

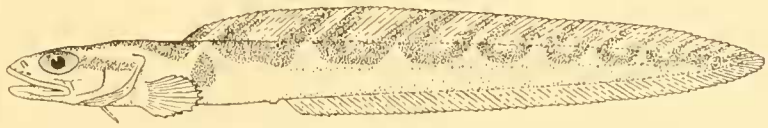

Fig. 49. *Ophthalmolycus macrops*. Holotype. $\times \frac{3}{4}$.

Genus Iluocoetes, Jenyns

1842, *Zool.* '*Beagle*', Fish., p. 165; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 243. Type *Iluocoetes fimbriatus*, Jenyns.

Caneolepis, Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 431. Type *C. acropterus*, Lahille.

Head about as broad as deep; body compressed. Mouth subterminal; teeth conical, present in jaws and on vomer and palatines; canines usually developed, at least in lower jaw. Gill-opening cleft downward almost or quite to lower end of base of pectoral. Dorsal origin just behind head, above base of pectoral; pelvic fins present.

Two species.

Iluocoetes fimbriatus, Jenyns (Plate I, fig. 4).

Iluocoetes fimbriatus, Jenyns, 1842, *Zool.* '*Beagle*', Fish., p. 166, pl. xxix, fig. 2; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 288; Delfin, 1901, *Cat. Peces Chile*, p. 98; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.* V (6), p. 8; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 13; Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 430; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, pp. 238, 243.

Lycodes variegatus, Günther, 1862, *Cat. Fish.*, IV, p. 322; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 21; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 321.

Phucocoetes variegatus effusus, Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 43, pl. v, fig. 32.

Phucocoetes variegatus micropus, Smitt, 1898, *t.c.*, p. 43, pl. v, fig. 33.

Phucocoetes variegatus macropus (part), Smitt, 1898, *t.c.*, p. 44, pl. v, fig. 36.

Phucocoetes variegatus, Delfin, 1901, *Cat. Peces Chile*, p. 97; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.* V (6), pp. 8, 19, pl. I, fig. 5; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 270.

Caneolepis acropterus, Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 431, pl. VII, figs. 1–10.

St. 51. 4. v. 26. Off Eddystone Rock, East Falkland Islands. From 7 miles N 50° E to 7·6 miles N 63° E of Eddystone Rock. Large otter trawl, 115–105 m.: 4 specimens, 70–85 mm.

St. WS 71. 23. ii. 27. 6 miles N 60° E of Cape Pembroke Light, East Falkland Islands. Commercial otter trawl, 82 m.: 1 specimen, 155 mm.

St. WS 98. 18. iv. 27. 49° 54′ 15″ S, 60° 35′ 30″ W. Commercial otter trawl, 173–171 m.: 2 specimens, 285, 340 mm.

St. WS 210. 29. v. 28. 50° 17′ S, 60° 06′ W. Nets (4 and 7 mm. mesh) attached to back of trawl, 161 m.: 5 specimens, 70–205 mm.

St. WS 212. 30. v. 28. 49° 22′ S, 60° 10′ W. Nets attached to back of trawl, 242–249 m.: 2 specimens, 64, 210 mm.

St. WS 214. 31. v. 28. 48° 25′ S, 60° 40′ W. Net (7 mm. mesh) attached to back of trawl, 208–219 m.: 2 specimens, 65, 230 mm.

St. WS 216. 1. vi. 28. 47° 37′ S, 60° 50′ W. Net (7 mm. mesh) attached to back of trawl, 219–133 m.: 5 specimens, 72–140 mm.

St. WS 218. 2. vi. 28. 45° 45′ S, 59° 35′ W. Commercial otter trawl, 311–247 m.: 1 specimen, 400 mm.

St. WS 244. 18. vii. 28. 52° 00′ S, 62° 40′ W. Net (7 mm. mesh) attached to back of trawl, 253–247 m.: 2 specimens, 58, 66 mm.

St. WS 246. 19. vii. 28. 52° 25′ S, 61° 00′ W. Net (7 mm. mesh) attached to back of trawl, 267–208 m.: 1 specimen, 62 mm.

St. WS 765. 17. x. 31. 45° 07′ S, 60° 28′ 15″ W. Net (7 mm. mesh) attached to back of trawl, 113–118 m.: 1 specimen, 80 mm.

St. WS 784. 5. xii. 31. 49° 47′ 45″ S, 61° 05′ W. Nets attached to back of trawl, 170–164 m.: 6 specimens, 38–125 mm.

St. WS 792. 15. xii. 31. 45° 52′ 30″ S, 62° 11′ 15″ W. Seine net attached to back of trawl, 106–112 m.: 1 specimen, 155 mm.

St. WS 795. 18. xii. 31. 46° 14′ S, 60° 24′ W. Commercial otter trawl, 157–161 m.: 1 specimen, 330 mm.

St. WS 801. 22. xii. 31. 48° 26′ 15″ S, 61° 28′ W. Seine net attached to back of trawl, 165–165 m.: 1 specimen, 150 mm.

St. WS 811. 10–12. i. 32. 51° 24′ 30″ S, 67° 53′ W. Net (4 mm. mesh) attached to back of trawl, 96–98 m.: 1 specimen, 180 mm.

St. WS 812. 10–12. i. 32. 51° 16′ 15″ S, 68° 52′ W. Net (7 mm. mesh) attached to back of trawl, 53–55 m.: 1 specimen, 90 mm.

St. WS 821. 18. i. 32. 52° 55′ 45″ S, 60° 55′ W. Net (4 mm. mesh) attached to back of trawl, 461–468 m.: 1 specimen, 108 mm.

St. WS 825. 28–29. i. 32. 50° 50′ S, 57° 15′ 15″ W. Commercial otter trawl, with net (7 mm. mesh) attached, 135–144 m.: 1 specimen, 195 mm.

St. WS 829. 31. i. 32. 50° 51′ S, 63° 13′ 30″ W. Rectangular net, 155 (–0) m.: 1 specimen, 155 mm.

St. WS 855. 22. iii. 32. 45° 58′ 30″ S, 64° 11′ W. Net (7 mm. mesh) attached to back of trawl, 115–110 m.: 1 specimen, 102 mm.

St. WS 856. 23. iii. 32. 46° 35′ S, 64° 11′ W. Small beam trawl, 104–104 m.: 1 specimen, 135 mm.

St. WS 869. 31. iii. 32. 52° 15′ 30″ S, 64° 13′ 45″ W. Small beam trawl, 187–201 m.: 1 specimen, 69 mm.

Small scales embedded in the skin. Depth of body 7 to $11\frac{1}{2}$ in the length, length of head $4\frac{1}{2}$ to $5\frac{1}{2}$. Diameter of eye 3 (young) to nearly 6 in length of head and 3 or 4 times interorbital width. Maxillary extending to below middle or posterior part of eye; lower jaw much shorter than upper; teeth conical, uniserial at sides of jaws but in 2 to 4 series anteriorly in adults; 1 or 2 pairs of canines at symphysis in upper jaw; usually 1 or 2 teeth on each side of lower jaw enlarged and canine-like; a patch of teeth on the vomer and a single series on each palatine. 80 to 85 rays in the dorsal fin, 65 to 70 in the anal; distance from head to origin of anal equal to or rather greater than length of head. Pectoral $\frac{1}{2}$ to $\frac{2}{3}$, pelvic about $\frac{1}{5}$ the length of head. Coloration very variable; head, body and fins variously spotted and marbled with paler and darker, with or without dark

cross-bars on back and upper parts of sides; usually with numerous smallish, rounded or oblong, pale yellowish or white spots scattered over head and upper parts of body, extending on to the dorsal fin; these spots are large and very distinct in some large individuals (? males), in which the ground colour is dark brown or black (Plate I, fig. 4); in other large specimens (? females) the spots are few, smaller and less prominent; a more or less distinct brown or black band directed forward from the eye, sometimes uniting with that of the opposite side on the end of the snout; sometimes another but less distinct band from eye to operculum; usually a series of black spots at edge of anterior part of dorsal fin; anal plain or with similar spots; pectoral uniformly yellowish (young), with a large dusky area and a pale hinder margin (half-grown), or dark brown or black with round white spots (large males?).

Hab. Coasts of Argentina; Patagonian-Falklands region; Straits of Magellan; southern Chile.

In addition to the above, there are 8 specimens (80–145 mm.) in the British Museum collection from the Falkland Islands and the Chiloe Archipelago, including the type of the species (145 mm.) and the types of *Lycodes variegatus* (100, 120 mm.).

Fig. 50. *Iluocoetes fimbriatus.* $\times \frac{1}{2}$.

Examination of the large series of specimens listed above reveals considerable variation, not only in the coloration and in the height of the dorsal fin, but also to some extent in the size of the eye and of the cleft of the mouth: I am convinced, however, that they are all referable to a single species. Comparatively few of the specimens have ripe gonads, but, judging from the individuals which I have been able to sex, it seems fairly certain that the large, white-spotted specimens with an exceptionally high dorsal fin (Plate I, fig. 4), described by Lahille as *Caneolepis acropterus*, are mature males.[1] Young specimens collected by the 'William Scoresby' agree almost exactly with the young fish figured by Smitt as *Phucocoetes variegatus* forma *macropus*.

The specimen sketched in water-colours by Mr E. R. Gunther had been in formalin for a few days, but its colour did not appear to have changed.

Iluocoetes elongatus (Smitt).

Phucocoetes variegatus elongatus, Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 44, pl. v, fig. 34.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 17 specimens, 83–145 mm.

[1] Lahille points out that one of the four types of *Caneolepis acropterus* is a male, but he was unable to ascertain the sex of the others.

St. WS 834. 2. ii. 32. 52° 57′ 45″ S, 68° 08′ 15″ W. Nets (4 and 7 mm. mesh) attached to back of trawl, 27–38 m.: 6 specimens, 85–130 mm.

St. WS 835. 2. ii. 32. 53° 05′ 30″ S, 68° 06′ 30″ W. Small beam trawl, 14–16 m.: 14 specimens, 85–145 mm.

No visible scales. Depth of body $7\frac{1}{2}$ to $9\frac{1}{2}$ in the length, length of head $5\frac{1}{2}$ to 6. Diameter of eye 6 to 7 in length of head, about equal to interocular width, greater than interorbital width. Maxillary extending to below posterior part or hinder edge of eye; lower jaw shorter than upper; teeth obtusely conical, those of upper jaw uniserial laterally, bi- or triserial anteriorly, those of lower jaw uniserial, with an inner series of 2 to 4 teeth at the symphysis; no canines in upper jaw, but 1 or 2 teeth on each side of lower jaw enlarged and canine-like; 2 or 3 teeth on the vomer and a single series on each palatine. About 85 rays in the dorsal fin, about 70 in the anal; distance from head

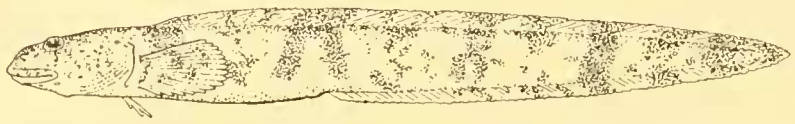

Fig. 51. *Iluocoetes elongatus.* $\times\frac{3}{4}$.

to origin of anal about $1\frac{1}{2}$ times length of head. Pectoral about $\frac{2}{3}$, pelvic $\frac{1}{4}$ to $\frac{1}{3}$ the length of head. Head, body and fins variegated with dark brown; body with a series of more or less distinct broad dark cross-bars; pectoral spotted and blotched with darker.

Hab. Patagonian-Falklands region.

This species, which was not previously represented in the British Museum collection, is readily distinguished from the preceding by the absence of scales, the smaller head, smaller eye, absence of canine teeth in the upper jaw, greater distance from the head to the origin of the anal fin, and by the coloration.

Genus Austrolycus, Regan

1913, *Trans. R. Soc. Edinb.*, XLIX, p. 245. Type *A. depressiceps*, Regan.

Some scales embedded in the skin. Head depressed; body compressed posteriorly. Mouth subterminal; teeth conical, uniserial at sides of jaws, bi- or triserial anteriorly; a group of teeth on the vomer and a single series on each palatine. Gill-opening cleft downward to middle or lower part of base of pectoral. Dorsal origin just behind head, above base of pectoral; pelvic fins present.

Two species.

Austrolycus depressiceps, Regan. "Grongi."

Lycodes latitans (*non* Jenyns), Günther, 1862, *Cat. Fish.*, IV, p. 321; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 471; Günther, 1881, *Proc. Zool. Soc.*, p. 20; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 21, pl. iii, fig. 1; Boulenger, 1900, *Ann. Mag. Nat. Hist.* (7) VI, p. 53; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 91.

Phucocoetes latitans (*non* Jenyns), Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 51, pl. v, figs. 37–39; Garman, 1899, *Mem. Mus. Comp. Zoöl.*, XXIV, p. 138; Delfin, 1901,

Cat. Peces Chile, p. 97; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 12; Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 421, fig. 6.

Lycodes (*Phucocoetes*) *latitans* (*non* Jenyns), Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 318.

Austrolycus depressiceps, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, pp. 238, 245, pl. v, fig. 1.

Depth of body 9 to 10 in the length, length of head $5\frac{1}{4}$ to $6\frac{1}{2}$. Diameter of eye $6\frac{1}{2}$ to $11\frac{1}{2}$ in length of head, much less than interocular width but nearly equal to interorbital width. Maxillary extending to below hinder edge of eye; lower jaw a little shorter than upper. 100 to 110 rays in the dorsal fin, 70 to 80 in the anal; distance from head to origin of anal $1\frac{3}{4}$ times to twice length of head. Pectoral $\frac{2}{3}$, pelvic $\frac{1}{5}$ to $\frac{1}{4}$ the length of head. Brownish or blackish-grey, abdomen paler; lower surface of head pale yellow; young and half-grown individuals with areas of pale yellow or white on sides of head, on the nape, above end of pectoral, and often on upper parts of sides and on dorsal fin; vent in a yellow or white spot.

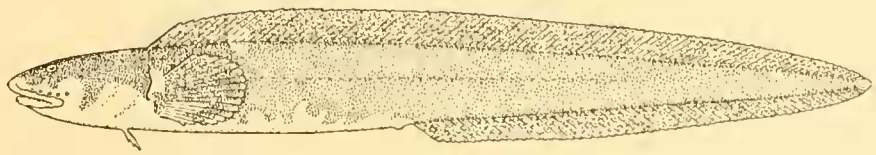

Fig. 52. *Austrolycus depressiceps*. $\times\frac{1}{2}$.

Hab. Patagonian-Falklands region; Straits of Magellan; Tierra del Fuego; southern Chile.

No specimens of this species were obtained by the Discovery Expedition, but Mr Bennett has sent 13 (50–480 mm.) from Stanley, Falkland Islands, taken from under stones at low water during spring tides from October to December; as well as 6 others (83–152 mm.) collected near the beach at New Island, West Falklands, by Mr Hamilton in February, 1934. There are also 16 specimens (45–290 mm.) in the British Museum collection from the Falklands, Straits of Magellan and Chonos Archipelago. The specimen of 240 mm. collected by Dr Cunningham, which was figured by Regan, may be regarded as the holotype. The species is said to be fairly common under rocks and stones along the shore in the neighbourhood of Stanley, and also in the deep water in Stanley Harbour. Mr Bennett notes that he once saw one of nearly 3 lb. weight. It is known locally as "Eel" or "Rock Eel".

Austrolycus laticinctus (Berg).

Lycodes laticinctus, Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 71, pl. i, fig. 2.

Lycodes (*Phucocoetes*) *platei*, Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 320, pl. xix, fig. 8.

Phucocoetes variegatus macropus (part), Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 44, pl. v, fig. 35.

Phucocoetes platei, Delfin, 1901, *Cat. Peces Chile*, p. 98.

? *Lycodalepis morenoi*, Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 413, pl. vi.

Lycodalepis laticinctus, Lahille, 1908, *t.c.*, p. 417, figs. 4, 5.

Austrolycus platei, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 246.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 4 specimens, 120–155 mm.

Depth of body 9 to 10 in the length, length of head $5\frac{3}{4}$ to 6. Diameter of eye about 7 in length of head, about equal to interocular width. Maxillary extending to below middle of eye; lower jaw distinctly shorter than upper. 100 to 115 rays in the dorsal fin, 75 to 85 in the anal; distance from head to origin of anal $1\frac{1}{3}$ to $1\frac{1}{2}$ times length of head. Pectoral about $\frac{2}{3}$, pelvic $\frac{1}{4}$ to $\frac{1}{3}$ the length of head. Body brownish, with a series of pale areas along upper parts of sides, continued on to the dorsal fin; other irregular pale spots and blotches scattered over lower parts of sides; abdomen and lower parts of head pale; snout and jaws pale yellowish-white, a sharp line separating this colour from the dark brown of the rest of the head, the latter sometimes projecting below the eye as a short bar; a pale area on the nape; pectorals pale, with a large dark area above; pelvics yellowish.

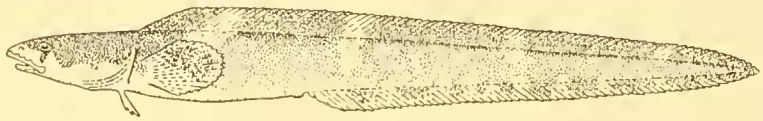

Fig. 53. *Austrolycus laticinctus.* $\times\frac{3}{4}$.

Hab. Coast of Argentina (?); Patagonian-Falklands region; Tierra del Fuego.

The above specimens agree very well with Berg's description of *Lycodes laticinctus*, the type of which was 155 mm. long and came from Santa Cruz. Steindachner's *Lycodes platei* from the east coast of Tierra del Fuego, the type of which was 234 mm. long, is an undoubted synonym, as is the example from Rio Grande, Tierra del Fuego, described and figured by Smitt (fig. 35) as *Phucocoetes variegatus macropus*. The young example, also identified by Smitt as *P. variegatus macropus* (fig. 36), is, as far as I can judge, a specimen of *Iluocoetes fimbriatus*. *Lycodalepis morenoi*, Lahille, was based upon a single large specimen (620 mm.) from Cape San Antonio (36° 20′ S). The tail appears to be shorter and the coloration somewhat different, but it seems probable that this form represents the same species as that described by Berg.

Genus Phucocoetes, Jenyns

1842, *Zool.* '*Beagle*', Fish., p. 168; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 246. Type *P. latitans*, Jenyns.

Some scales embedded in the skin. Head and body compressed. Mouth subterminal; teeth conical, those of upper jaw uniserial laterally, usually with an outer series of enlarged and canine-like teeth anteriorly, those of lower jaw bi- or triserial; teeth on the vomer and in a single series on each palatine; 1 or 2 pairs of teeth in the lower jaw and the middle vomerine teeth more or less enlarged and canine-like. Gill-opening small, above base of pectoral. Dorsal origin just behind head, above base of pectoral; pelvic fins present.

A single species.

Phucocoetes latitans, Jenyns.

Phucocoetes latitans, Jenyns, 1842, *Zool.* '*Beagle*', Fish., p. 168, pl. xxix, fig. 3; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 246.

Lycodes flavus, Boulenger, 1900, *Ann. Mag. Nat. Hist.* (7) VI, p. 53.
Phucocoetes platei, Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 13.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 2 specimens, 23, 30 mm.

St. WS 847. 9. ii. 32. 50° 15′ 45″ S, 67° 57′ W. Commercial otter trawl, with nets attached, 56–84 m.: 4 specimens, 123–140 mm.

Depth of body $7\frac{3}{4}$ to 10 in the length, length of head $6\frac{1}{2}$ to 7. Diameter of eye 6 to 8 in length of head, equal to or greater than the interorbital width. Lower jaw included; maxillary extending to below posterior part or hinder edge of eye. About 100 rays in the dorsal fin, about 80 in the anal; distance from head to origin of anal about $1\frac{1}{2}$ times length of head. Pectoral about $\frac{3}{5}$, pelvic $\frac{1}{4}$ to nearly $\frac{1}{3}$ the length of head.

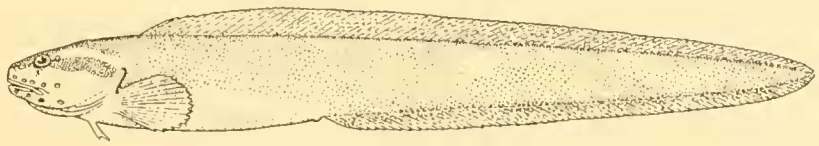

Fig. 54. *Phucocoetes latitans.* × 1.

Brownish; upper part of head dark brown, with a pale yellow band from the eye to the shoulder; lower part of head pale yellowish.

Hab. Falkland Islands.

In addition to the above, Mr Bennett has sent 4 specimens (58–92 mm.) from Stanley, Falklands, and there are 5 others (45–115 mm.) in the British Museum collection, including two of the types of the species and the type of *Lycodes flavus*.

Mr Bennett notes that his specimens were secured from among the hollow tangled roots of "kelp" (*Macrocystis*), and the type of *Lycodes flavus* was obtained by Mr Vallentin in exactly the same manner.[1] Two of the specimens collected by the 'William Scoresby' in February, 1932, are females with ripe ova.

Genus Crossostomus, Lahille

Crossostomus,[2] Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 408. Type *Lycodes* (*Iluocoetes*) *fimbriatus*, Steindachner *nec* Jenyns.

Crossolycus, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 247. Type *C. chilensis*, Regan [= *Lycodes* (*Iluocoetes*) *fimbriatus*, Steindachner *nec* Jenyns].

Scales embedded in the skin. Body elongate, compressed. Snout and lower jaw with fringes. Mouth subterminal; teeth in jaws conical, bi- or triserial; lower jaw with a posterior canine; palate toothless. Gill-opening almost entirely above base of pectoral. Dorsal origin just behind head, above or a little in advance of base of pectoral; pelvic fins present.

Two species.

[1] This appears to be the normal habitat of the species.

[2] Not to be confused with *Crossostoma*, which has been used as a generic name in the Mollusca (1850), in the Vermes (1854), in the Coelenterata (1862), and in the Pisces (1878).

Crossostomus chilensis (Regan).

Lycodes (*Iluocoetes*) *fimbriatus* (*non* Jenyns), Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 322, pl. XX, fig. 10.

Crossostomus fimbriatus, Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 410.

Crossolycus chilensis, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 247.

Depth of body equal to length of head and $6\frac{3}{5}$ in that of fish. Diameter of eye 7 in length of head, equal to interorbital width. Lips thick. 80 rays in the dorsal fin, 60 in the anal; distance from head to origin of anal $1\frac{1}{2}$ times length of head. Pectoral $\frac{2}{3}$ the length of head. Head, body and dorsal fin marbled with brown.

Hab. Tierra del Fuego.

Known only from the unique holotype, 252 mm. in total length, from Cape Espiritu Santo, east coast of Tierra del Fuego.

Crossostomus fasciatus (Lönnberg).

Iluocoetes fimbriatus fasciatus, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 20.

Crossolycus fasciatus, Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 247.

Depth of body $7\frac{1}{2}$ in the length, length of head 5. Diameter of eye $5\frac{3}{5}$ in length of head, equal to interorbital width. Distance from head to origin of anal fin $1\frac{1}{3}$ times length of head. Pectoral a little more than $\frac{1}{2}$ length of head. Dark brown, with 5 or 6 whitish transverse bars.

Hab. Falkland Islands.

Known only from the unique holotype, 74 mm. in total length.

I have followed Regan in placing this fish in this genus, but it seems possible that re-examination of the type will show that it is a young example of *Austrolycus depressiceps*.

Genus Pogonolycus, nov.

Type *P. elegans*, sp.n.

Scales embedded in the skin. Body elongate, compressed. Snout and lower jaw with numerous small dermal tentacles. Mouth terminal; teeth conical, in several rows in both jaws, those of the outer series somewhat enlarged; 1 or 2 enlarged canine-like teeth on each side of lower jaw; a group of teeth on the vomer and 2 rows on each palatine. Gill-opening cleft downward to middle of base of pectoral. Dorsal origin just behind head, above anterior part of pectoral; pelvic fins present.

Pogonolycus elegans, sp.n. (Plate I, fig. 3).

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 43 mm.

St. WS 246. 19. vii. 28. 52° 25′ S, 61° 00′ W. Nets (4 and 7 mm. mesh) attached to back of trawl, 267–208 m.: 1 specimen, 158 mm. Holotype.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 1 specimen, 21 mm.

St. WS 878. 4. iv. 32. 52° 36′ S, 58° 54′ W. Rectangular net, 121 (–0) m.: 2 specimens, 62, 63 mm.

Depth of body $8\frac{1}{2}$ to $9\frac{1}{2}$ in the length, length of head $5\frac{1}{4}$ (young) to $6\frac{3}{4}$. Diameter of eye $4\frac{1}{2}$ (young) to $5\frac{1}{2}$ in length of head, about equal to interorbital width. Maxillary

extending about to below middle of eye; jaws equal anteriorly. About 75 rays in the dorsal fin, about 60 in the anal; distance from head to origin of anal about $1\frac{1}{3}$ times length of head. Pectoral about $\frac{1}{2}$, pelvic $\frac{1}{5}$ to $\frac{1}{4}$ the length of head. Pale yellowish, with a broad brown lateral stripe, edged with darker brown, and a similar but interrupted band along the middle of the back, extending on to the dorsal fin, the three bands uniting on the upper surface of the head; a narrow brown vertical streak below the eye; anal and pectoral fins yellowish.

Hab. Patagonian-Falklands region.

Fig. 55. *Pogonolycus elegans.* Holotype. × 1.

The specimen sketched in water-colours by Mr E. R. Gunther (St. WS 97) had been in formalin for several days, but its colours did not appear to have altered. It was brought up in the trawl among colonies of *Cephalodiscus.*

Genus Platea, Steindachner

1898, *Zool. Jahrb.*, Suppl. IV, p. 323; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 247. Type *P. insignis*, Steindachner.

Skin naked. Body elongate, compressed. Snout and lower jaw with dermal processes. Mouth subterminal; teeth incisor-like, uniserial in both jaws; palate toothless. Gill-opening cleft downward to middle of base of pectoral. Dorsal origin just behind head, above anterior part of pectoral; pelvic fins present.

A single species.

Platea insignis, Steindachner.

Platea insignis, Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 323, pl. XX, fig. 12; Delfin, 1901, *Cat. Peces Chile*, p. 98; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 248; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 91; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 417.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 6 specimens, 83–180 mm.

St. WS 835. 2. ii. 32. 53° 05′ 30″ S, 68° 06′ 30″ W. Small beam trawl, 14–16 m.: 8 specimens, 110–140 mm.

Depth of body $11\frac{1}{2}$ to $14\frac{1}{2}$ in the length, length of head 7 to $7\frac{1}{2}$. Diameter of eye 6 to 7 in length of head, greater than interorbital width. Lower jaw more or less included; maxillary extending to below middle of eye. About 100 to 110 rays in the dorsal fin, about 90 to 100 in the anal; distance from head to origin of anal about $1\frac{1}{2}$ times length

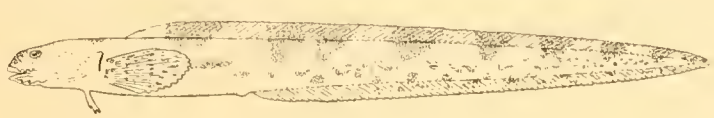

Fig. 56. *Platea insignis.* × $\frac{1}{2}$.

of head. Pectoral nearly as long as head, pelvic about $\frac{1}{3}$ the length of head. Pale brownish, the head, body and fins spotted and variegated with darker, a row of dark saddle-like blotches along the back being most prominent.

Hab. Coast of Argentina; Patagonian-Falklands region; Tierra del Fuego.

The type of the species, which is 265 mm. in total length, is from Cape Espiritu Santo, east coast of Tierra del Fuego. The species is new to the British Museum collection.

Genus Maynea, Cunningham

1871, *Trans. Linn. Soc. London*, XXVII, p. 471; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 248. Type *M. patagonica*, Cunningham.

Gymnelichthys, Fischer, 1885, *Jahrb. Hamb. Wiss. Anst.*, II, p. 60. Type *G. antarcticus*, Fischer.

Body elongate or rather short, compressed. Mouth terminal; teeth conical, uniserial in both jaws and on vomer and palatines. Gill-opening cleft downward to or nearly to middle of base of pectoral. Dorsal origin just behind head, above base of pectoral; no pelvic fins.

Three species: two from the Patagonian region, one from South Georgia.

Maynea patagonica, Cunningham.

Maynea patagonica, Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 472; Günther, 1881, *Proc. Zool. Soc.*, p. 20, pl. ii, figs. C, D; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 624; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 318; Delfin, 1901, *Cat. Peces Chile*, p. 96; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, V (6), p. 8; Lahille, 1908, *Anal. Mus. Nac. B. Aires*, XVI, p. 439, fig. 8; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 248; Hussakof, 1914, *Bull. Amer. Mus. Nat. Hist.*, XXXIII, p. 92.

Small scales embedded in the skin. Depth of body 10 to $12\frac{1}{2}$ in the length, length of head $6\frac{2}{3}$ to $7\frac{1}{3}$. Diameter of eye 5 to 6 in length of head, much greater than interorbital width. Maxillary extending to below anterior $\frac{1}{3}$ or middle of eye; teeth all small, more or less equal in size, scarcely curved. About 120 rays in the dorsal fin, about 95 in the anal; distance from head to origin of anal $1\frac{2}{3}$ to $1\frac{4}{5}$ in length of head. Pectoral less than $\frac{1}{2}$ the length of head. Yellowish, with broad brown cross-bars separated by narrow interspaces.

Hab. Patagonian-Falklands region; Straits of Magellan; Tierra del Fuego.

No specimens of this species were obtained by the Discovery Expedition, but there are two in the British Museum collection: the holotype (150 mm.) from the Otter Islands, and another (90 mm.) from the Straits of Magellan.

Maynea brevis, sp.n.

St. WS 216. 1. vi. 28. 47° 37′ S, 60° 50′ W. Net (7 mm. mesh) attached to back of trawl, 219–133 m.: 1 specimen, 44 mm.

St. WS 244. 18. vii. 28. 50° 00′ S, 62° 40′ W. Net (7 mm. mesh) attached to back of trawl, 253–247 m.: 1 specimen, 43 mm.

St. WS 784. 5. xii. 31. 49° 47′ 45″ S, 61° 05′ W. Seine net attached to back of trawl, 170–164 m.: 1 specimen, 68 mm.

St. WS 825. 28–29. i. 32. 50° 50′ S, 57° 15′ 15″ W. Commercial otter trawl, with net (7 mm. mesh) attached, 135–144 m.: 1 specimen, 90 mm. Holotype.

Skin rather loose, naked. Depth of body 6 to 7 in the length, length of head 4 to $4\frac{3}{4}$. Diameter of eye 4 to $4\frac{3}{4}$ in length of head, equal to or greater than interorbital width. In the two larger specimens the snout and lower jaw, as well as the opercular region, are provided with broad dermal processes, of which one above each eye is most prominent and is present also in the smaller specimens. Maxillary extending to below middle or posterior part of eye; teeth strong, pointed, curved, more or less unequal in size, those on the vomer and palatines larger than those in the jaws. About 65 rays in the dorsal fin, about 55 in the anal; distance from head to origin of anal equal to

Fig. 57. *Maynea brevis.* Holotype. $\times 1\frac{1}{2}$.

or a little less than length of head. Pectoral $\frac{3}{5}$ to $\frac{2}{3}$ the length of head. Head, body and fins spotted and variegated with dark brown; some short cross-bars directed obliquely forward on upper parts of sides; 2 broad dark bars below the eye, another from the eye to the edge of the praeoperculum, and usually another between the anterior parts of the eyes; dorsal and anal fins sometimes with a row of brown spots; pectoral uniformly yellowish or with small brown spots.

Hab. Patagonian-Falklands region.

It is possible that this species should be placed in a genus distinct from *Maynea*, as it differs from *M. patagonica* and *M. antarctica* in the much shorter body, fewer fin-rays, loose, naked skin, as well as in the presence of dermal processes on the head. The teeth are also stronger, and in this character *M. brevis* approaches the genus *Melanostigma*.

Genus Melanostigma, Günther

1881, *Proc. Zool. Soc.*, p. 21; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 248. Type *M. gelatinosum*, Günther.

Skin naked. Body compressed, elongate. Mouth terminal; teeth uniserial in both jaws and on vomer and palatines. Gill-opening small, above base of pectoral. Dorsal origin just behind head; no pelvic fins.

Several species from deep water in the Atlantic and Pacific: two from the Patagonian region.

Melanostigma gelatinosum, Günther.

Melanostigma gelatinosum, Günther, 1881, *Proc. Zool. Soc.*, p. 21, pl. ii, fig. A; Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 248.

Skin loose. Depth of body about 10 in the length, length of head 6. Diameter of eye $3\frac{1}{3}$, interorbital width about 12 in length of head. Mouth oblique; maxillary extending to below middle of eye; a patch of teeth on the vomer, the middle teeth larger. Distance from head to origin of anal equal to length of head. Pectoral nearly

$\frac{1}{2}$ length of head. Sides spotted and marbled with purplish-grey; end of tail blackish; inside of mouth, gill-opening and vent black.

Hab. Straits of Magellan, 24 fathoms.

Known only from the unique holotype, 140 mm. in total length.

Melanostigma microphthalmus, sp.n.

St. WS 246. 19. vii. 28. 52° 25′ S, 61° 00′ W. Commercial otter trawl, 267–208 m.: 1 specimen, 70 mm.

St. WS 248. 20. vii. 28. 52° 40′ S, 58° 30′ W. Commercial otter trawl, 210–242 m.: 1 specimen, 85 mm. Holotype.

Skin not loose. Depth of body about 10 in the length, length of head $6\frac{1}{2}$ to nearly 7. Diameter of eye about $5\frac{1}{2}$ in length of head, greater than interorbital width. Mouth nearly horizontal; maxillary extending to below anterior part or middle of eye; no canines in upper jaw, but an enlarged canine-like tooth on each side of lower jaw; a pair of teeth placed side-by-side on the vomer. Distance from head to origin of anal greater

Fig. 58. *Melanostigma microphthalmus.* × $1\frac{1}{2}$.

than length of head. Pectoral about $\frac{1}{2}$ length of head. Back and sides brownish; abdomen and lower parts of head pale yellowish-white, spotted or marbled with brown; in the holotype the pale colour of the abdomen extends posteriorly along lower part of side; median fins pale yellowish-white, with some irregular brown markings; pectorals yellowish; inside of mouth and gill-opening pale.

Hab. Just south of the Falkland Islands.

LYCODAPODIDAE

There is some doubt whether this family can be maintained as distinct from the Zoarcidae, to which it is very closely allied. I have ascertained that in *Lycodapus australis* the basal bones of the dorsal and anal fins are equal in number to the neural and haemal spines. Regan (1912, *Ann. Mag. Nat. Hist.*, Ser. 8, x, p. 276) has pointed out that "the head and mouth [of *Lycodapus*] recall those of *Lycodopsis* or *Bothrocara*, the gill-membranes join the isthmus between the rami of the lower jaw (at least in *L. fierasfer*), and the dorsal and anal rays correspond in number to the myotomes".

Lycodapus australis, sp.n.

St. WS 748. 16. ix. 31. 53° 41′ 30″ S, 70° 55′ W. Rectangular net, 300 m.: 4 specimens, 50–93 mm. (holotype, 93 mm.).

Depth of body $11\frac{1}{2}$ to nearly 12 in the length, length of head $6\frac{1}{4}$ to $6\frac{3}{4}$. Snout about $1\frac{1}{2}$ times as long as eye, diameter of which is $4\frac{1}{2}$ in length of head and greater than interorbital width. Lower jaw a little longer than upper; maxillary extending to below

anterior part or middle of eye; teeth small, curved, in broad bands in both jaws, the bands tapering posteriorly; teeth of the outer row a little larger and set nearly horizontally; many of the teeth visible when the mouth is closed; a transverse series of 3 to 6 similar teeth on the vomer and a row of 10 to 15 on each palatine. Gill-opening extending well above base of pectoral; no pseudobranchiae; gill-rakers longer than broad, 10 on lower part of anterior arch; gill-membranes united anteriorly and free from the isthmus. Dorsal 82–85; origin above middle of pectoral. Anal about 75; distance from head to origin of fin about equal to length of head. Pectoral $2\frac{3}{5}$ to 3 in length of head. Skin loose; mucous pores on head rather inconspicuous; an irregular

Fig. 59. *Lycodapus australis*. Holotype. $\times 1\frac{1}{2}$.

double row of mucous pores along anterior part of side, rising anteriorly above the pectoral fin, becoming single and eventually disappearing posteriorly. Uniformly brownish; head paler; fins yellowish-brown.

Hab. Straits of Magellan.

All the previously known species of this genus are from the Pacific coast of North America, ranging from the Bering Sea to Lower California. In the conspicuous mucous pores on the body this species resembles *L. dermatinus*, Gilbert, but differs in the dentition, greater number of dorsal and anal rays, smaller head, rather more slender body, etc. A related genus, *Snyderidea*, Gilbert, with canine-like teeth in the jaws and on the vomer and palatines, has been described from the Hawaiian Islands.

OPHIDIIDAE

Genus Genypterus, Philippi

1857, *Arch. Naturgesch.*, XXIII (1), p. 268. Type *G. nigricans*, Philippi.

Key to the South American species

I. Depth of body $6\frac{2}{3}$ to $9\frac{1}{2}$, head $4\frac{1}{2}$ to 5 in length of fish; interorbital width $6\frac{1}{2}$ to $8\frac{1}{2}$ in length of head.

A. Depth of body $7\frac{1}{2}$ to $9\frac{1}{2}$ in length of fish; eye 5 to 7 (very large specimens) in length of head; coloration yellowish, the back and upper parts of sides marbled with brown ... ... *blacodes*.

B. Depth of body $6\frac{2}{3}$ to $7\frac{1}{2}$ in length of fish; eye 7 to $7\frac{3}{4}$ in length of head; back and upper parts of sides blackish, with some rather small and irregularly arranged white spots ... ... *chilensis*.

II. Depth of body 6 to $6\frac{1}{4}$, head about 4 in length of fish; interorbital width about $5\frac{1}{2}$ in length of head; whole body chocolate brown or blackish, covered with large white hieroglyphic-like markings ... ... *maculatus*.

Genypterus blacodes (Schneider). "Abadejo"; "Ymakara" or "Himakhara".

Ophidium blacodes, Schneider, 1801, in Bloch, *Syst. Ichth.*, p. 484.

Genypterus blacodes, Hutton and Hector, 1872, *Fish. N. Zealand*, pp. 48, 116, pl. viii, fig. 77; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) x [xxx], p. 628; Berg, 1895, *Anal. Mus. Nac. B. Aires*, iv, p. 72; Regan, 1903, *Ann. Mag. Nat. Hist.* (7) xi, p. 600; Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, v (6), p. 9, pl. ii, fig. 6; McCulloch, 1914, *Biol. Res. 'Endeavour'*, ii, p. 158; Devincenzi, 1924, *Anal. Mus. Montevideo* (ii) i (5), p. 275; Phillipps, 1927, *N. Zealand Mar. Dept. Fish. Bull.*, i, p. 52; McCulloch, 1929, *Mem. Austral. Mus.*, v, p. 357.

Genypterus tigerinus, Klunzinger, 1872, *Arch. Naturgesch.*, xxviii (1), p. 39.

Genypterus australis, Castelnau, 1872, *Proc. Zool. Acclim. Soc. Victoria*, i, p. 164.

? *Genypterus chilensis*, Vaillant, 1888, *Miss. Sci. Cap Horn*, vi. Zool., Poiss., p. 19.

Genypterus capensis, Berg, 1898, *Comun. Mus. Nac. B. Aires*, i, p. 13; Berg, 1899, *t.c.*, p. 97.

? *Genypterus microstomus*, Regan, 1903, *Ann. Mag. Nat. Hist.* (7) xi, p. 599; McCulloch, 1914, *Biol. Res. 'Endeavour'*, ii, p. 159, pl. xiv, fig. 2; Devincenzi, 1924, *Anal. Mus. Montevideo* (ii) i (5), p. 275.

St. WS 79. 13. iii. 27. 51° 01′ 30″ S, 64° 59′ 30″ W. Commercial otter trawl, 132–131 m.: 2 specimens, 350, 430 mm.

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 3 specimens, 400–480 mm.

St. WS 216. 1. vi. 28. 47° 37′ S, 60° 50′ W. Commercial otter trawl, 219–133 m.: 1 specimen, 450 mm.

St. WS 217. 1. vi. 28. 46° 28′ S, 60° 18′ W. Commercial otter trawl, 146 m.: 1 specimen, 820 mm.

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Seine net attached to back of trawl, 87–82 m.: 1 specimen, 190 mm.

St. WS 789. 13. xii. 31. 45° 17′ S, 64° 22′ W. Seine net attached to back of trawl, 95–93 m.: 5 specimens, 190–350 mm.

St. WS 816. 14. i. 32. 52° 09′ 45″ S, 64° 56′ W. Commercial otter trawl, 150 m.: 1 specimen, 960 mm.

Depth of body $7\frac{1}{2}$ to $9\frac{1}{2}$ in the length, length of head $4\frac{1}{2}$ to 5. Snout as long as or longer than eye, diameter of which is 5 (young) to 7 (large specimens) in length of head; interorbital width $6\frac{1}{2}$ to $8\frac{1}{2}$. Maxillary extending to below hinder edge of eye or beyond, the width of its distal extremity nearly equal to diameter of eye. Gill-rakers about $\frac{1}{2}$ as long as eye; 4 (+ rudiments) on lower part of anterior arch. 11 to 15 rows of scales between anterior rays of dorsal fin and the lateral line. Dorsal commencing above middle of pectoral, the length of which is $2\frac{1}{4}$ to $2\frac{2}{3}$ in that of head; longest pelvic ray about $\frac{2}{5}$ length of head. Yellowish; upper parts of sides marbled with brown, the darker markings sometimes rather indistinct; vertical fins with a continuous broad brown longitudinal band, sometimes somewhat indistinct and diffuse, and with pale margins.

Hab. Australia and New Zealand; coasts of south-eastern South America from Uruguay to the Straits of Magellan.

I am unable to detect any important differences between the specimens collected by the 'William Scoresby' in the Patagonian-Falklands region and 9 specimens (260–900 mm.) in the British Museum collection from Australia and New Zealand. It seems

probable that the examination of a larger series of examples will show that *G. microstomus*, Regan, cannot be maintained as a distinct species, but, if it should prove to be distinct, this form occurs also in the Argentina-Patagonian-Falklands region. McCulloch (1914) has pointed out that the size of the mouth as measured by the position of the hinder edge of the maxillary in relation to the eye is not a reliable character, and, apart from the very slightly larger scales and the coloration, there appear to be no essential differences between the two forms.

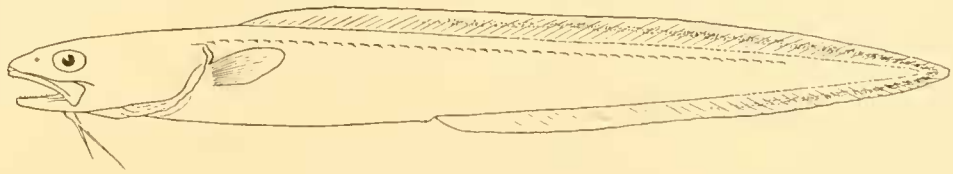

Fig. 60. *Genypterus blacodes*. $\times \frac{2}{5}$.

Genypterus blacodes is very close to *G. capensis*, and, as suggested by Barnard, the two species may eventually have to be united. If examples of similar size are compared, however, *G. capensis* seems to have a larger eye, the diameter of which is $5\frac{1}{2}$ to 6 (in specimens of 440–480 mm.) or 7 or more (in large specimens) in the length of the head; the interorbital width is somewhat narrower, being $7\frac{1}{2}$ to $8\frac{1}{2}$ in the length of the head; the markings on the body are much less conspicuous, and the brown band on the vertical fins is rather broader and more diffuse.

Genypterus chilensis (Guichenot). "Congrio colorado."

Conger chilensis, Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 339.

Genypterus blacodes, Günther, 1862, *Cat. Fish.*, IV, p. 380; Delfin, 1903, *Revist. Chil.*, VII, p. 37, pl. xiii, fig. 2; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 469; Evermann and Radcliffe, 1917, *Bull. U.S. Nat. Mus.*, XCV, p. 149.

Genypterus chilensis, Günther, 1862, *Cat. Fish.*, IV, p. 380; Günther, 1880, *Shore Fish. 'Challenger'*, p. 25; Regan, 1903, *Ann. Mag. Nat. Hist.* (7) XI, p. 600.

Depth of body $6\frac{2}{3}$ to $7\frac{1}{2}$ in the length, length of head $4\frac{1}{2}$ to $4\frac{3}{4}$. Snout longer than eye, diameter of which is 7 to $7\frac{3}{4}$ in length of head; interorbital width about 7. Maxillary extending to well beyond eye. Length of pectoral about $2\frac{1}{4}$ in that of head. Back and upper parts of sides blackish, with some rather small and irregularly arranged white spots; lower parts abruptly yellowish.

Hab. Coasts of Chile and Peru.

There are 3 specimens (355–580 mm.) in the British Museum collection: 2 from Concepcion, received from Mr Cavendish Bentinck; and 1 from Valparaiso, collected by the 'Challenger' Expedition. A young specimen (130 mm.), also from Valparaiso, seems to belong here.

This species is closely related to *G. blacodes*, but the body is deeper, the eye smaller, and the coloration different.

Genypterus maculatus (Tschudi). "Congrio negro."

Ophidium blancodes, Tschudi, 1846, *Fauna Peru.*, Ichth., p. 29.

Ophidium maculatum, Tschudi, 1846, *t.c.*, p. 29, pl. v.

Genypterus nigricans, Philippi, 1857, *Arch. Naturgesch.*, XXIII (1), p. 269.
Genypterus maculatus, Regan, 1903, *Ann. Mag. Nat. Hist.* (7) XI, p. 600.
Genypterus chilensis, Delfin, 1903, *Revist. Chil.*, VII, p. 35, pl. xiii, fig. 1; Evermann and Radcliffe, *Bull. U.S. Nat. Mus.*, XCV, p. 150.

Depth of body 6 to $6\frac{1}{4}$ in the length, length of head about 4. Snout longer than eye, diameter of which is $7\frac{1}{2}$ to nearly 8 in length of head; interorbital width about $5\frac{1}{2}$. Maxillary extending to well beyond eye. Length of pectoral about twice in that of head. Back and sides as well as lower parts and the greater part of the abdomen chocolate brown or blackish, with conspicuous hieroglyphic-like white markings over the whole of the body and the fins; posterior part of pectoral with a narrow white border.

Hab. Coasts of Chile and Peru.

There are 3 specimens (290–480 mm.) in the British Museum collection from Chile, 2 of them received from Mr Cavendish Bentinck.

Many writers on Chilean and Peruvian fishes have identified the "Congrio negro" as *G. chilensis*, and the "Congrio colorado" as *G. blacodes*. There appears to be little doubt that the form with a short body, broad interorbital region, rather long and pointed pectoral fin, and with the large and characteristic white markings, is that figured by Tschudi as *Ophidium maculatum*, but this is usually identified with *Conger chilensis* of Guichenot. The latter is inadequately described to enable the fish to be identified with certainty, but the description seems to apply more nearly to the "Congrio colorado", and, pending a re-examination of the type, the name *chilensis* may be used for this species. *G. nigricans*, Philippi, is almost certainly identical with *G. maculatus*. Owing to the confusion between the two Chilean and Peruvian species it has proved impossible to give full synonymies of these.

BROTULIDAE

Cataetyx messieri (Günther).

Sirembo messieri, Günther, 1878, *Ann. Mag. Nat. Hist.* (5) II, p. 19.
Cataetyx messieri, Günther, 1887, *Deep-Sea Fish.* '*Challenger*', p. 104, pl. xxiii, fig. B; Goode and Bean, 1895, *Ocean. Ichth.*, p. 318, fig.; Barnard, 1927, *Ann. S. Afric. Mus.*, XXI, p. 877.

St. WS 248. 20. vii. 28. 52° 40′ S, 58° 30′ W. Commercial otter trawl, 210–242 m.: 1 specimen, 145 mm.

St. WS 773. 31. x. 31. 47° 28′ S, 60° 51′ W. Commercial otter trawl, 291–296 m.: 1 specimen, 230 mm.

Hab. Patagonian-Falklands region; Messier Channel, Chile; South Africa.

The type is about 200 mm. in total length.

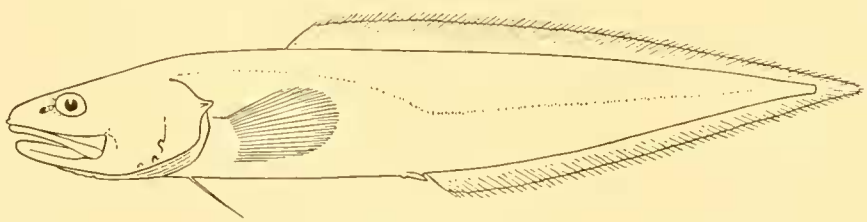

Fig. 61. *Cataetyx messieri*. ×$\frac{1}{2}$.

Both the above specimens are males and both have the curious anal papilla described by Gilchrist[1] in a large specimen from South Africa, believed by him to be a copulatory organ of some kind.

CENTROLOPHIDAE

Seriolella porosa, Guichenot. "Cojinova"; "Lacarh'" or "Lassarh'".

1848–9, in Gay, *Hist. Chile*, Zool. II, p. 239, pl. vii, fig. 2; Günther, 1860, *Cat. Fish.*, II, p. 467; Hutton, 1875, *Trans. N. Zeal. Inst.*, VIII, p. 211; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 29; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 35; Delfin, 1901, *Cat. Peces Chile*, p. 52; Regan, 1902, *Ann. Mag. Nat. Hist.* (7) X, p. 128.

Neptonemus dobula, Günther, 1869, *Proc. Zool. Soc.*, p. 429.

Seriolella dobula, McCulloch, 1929, *Mem. Austral. Mus.*, V, p. 124.

St. WS 853. 21. iii. 32. 44° 39′ 45″ S, 64° 13′ 30″ W. Commercial otter trawl, 90–90 m.: 6 specimens, 365–390 mm.

Depth of body 4 to $4\frac{1}{2}$ in the length, length of head $3\frac{1}{2}$ to 4. Snout longer than eye, diameter of which is 4 to 5 in length of head; interorbital width about 3 times. Maxillary slipping under the praeorbital for the entire length of its upper edge, extending to below anterior margin of eye. Opercular bones not scaled; praeopercular margin with minute denticulations or entire; angle of praeoperculum forming a distinct rounded lobe. About 14 gill-rakers on lower part of anterior arch. Lateral line running high, concurrent with the dorsal profile. Dorsal VII–VIII, I 37–40; the third, fourth and

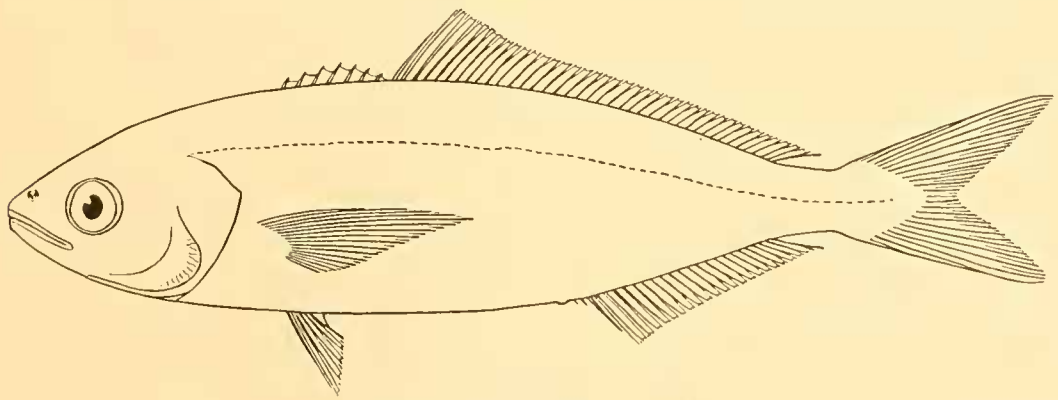

Fig. 62. *Seriolella porosa*. × $\frac{3}{8}$.

fifth spines longest, equal to $\frac{1}{2}$ to $\frac{2}{3}$ the diameter of the eye; the anterior soft rays about $\frac{2}{5}$ the length of head. Anal III 23–26; the first two spines short and somewhat detached from the rest of the fin. Pectoral nearly as long as head; pelvics inserted behind pectorals, length $2\frac{1}{2}$ to $2\frac{2}{3}$ in that of head.

Hab. Atlantic and Pacific coasts of Patagonia; Chile; coasts of Australia and New Zealand.

I am unable to detect any important differences between the above specimens and several specimens from Tasmania in the British Museum collection, and conclude that

[1] 1904, *Mar. Invest. S. Africa*, III, p. 141.

S. dobula is identical with *S. porosa*. *S. punctata* (Schneider), of which *S. bilineata* (Hutton) is a synonym, is very closely related. *S. brama* (Günther), from Australia and New Zealand, has a deeper body and only 27 to 31 soft rays in the dorsal fin. Other species of *Seriolella* are: *S. violacea*, Guichenot, from Chile; *S. amplus*, Griffin, from New Zealand; *S. velaini*, Sauvage, from the Island of St Paul; and *S. antarctica* (Carmichael), from Tristan da Cunha.[1]

Palinurichthys caeruleus (Guichenot).

Seriolella caerulea, Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 242.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 315 mm.

St. WS 816. 14. i. 32. 52° 09′ 45″ S, 64° 56′ W. Commercial otter trawl, 150 m.: 1 specimen, 320 mm.

Depth of body $2\frac{2}{5}$ to $2\frac{3}{5}$ in the length, length of head $3\frac{1}{2}$ to $3\frac{2}{3}$. Snout as long as or a little shorter than eye, diameter of which is $3\frac{2}{3}$ to 4 in length of head; interorbital width about $3\frac{1}{4}$. Maxillary more or less exposed, extending to below anterior part of eye. Operculum, subopercular and interopercular scaled; margin of praeoperculum feebly denticulated. About 14 gill-rakers on lower part of anterior arch. About 95 scales in the lateral line, which does not become straight until it reaches the caudal peduncle. Dorsal VIII–IX 31–32(?). Anal III 20–21(?). Pectoral as long as or nearly

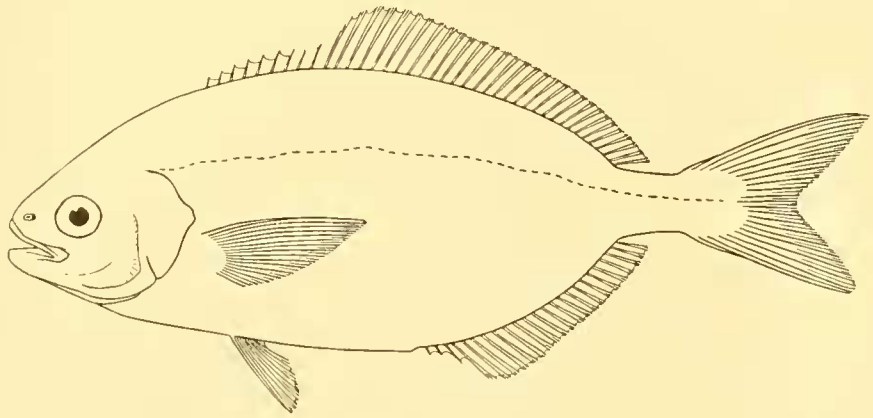

Fig. 63. *Palinurichthys caeruleus*. $\times\frac{1}{3}$.

as long as head; pelvics inserted distinctly behind pectorals, length about twice in that of head.

Hab. Patagonian-Falklands region; Juan Fernandez.

It is with some doubt that I have identified these specimens with Guichenot's species, as the original description is a poor one and Mr Chabanaud informs me that the type is not to be found in the Paris Museum. Regan (1902, *Ann. Mag. Nat. Hist.*, Ser. 7, X, p. 128) has suggested that this species does not belong to the genus *Seriolella*, "and may be a *Lirus*".

[1] I am greatly indebted to Mr P. Chabanaud for photographs of the type specimens of *S. porosa* and *S. violacea* in the Paris Museum.

Palinurichthys griseolineatus, sp.n.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 248 mm. Holotype.

St. WS 108. 25. iv. 27. 48° 30′ 45″ S, 63° 33′ 45″ W. Commercial otter trawl, 118–120 m.: 1 specimen, 245 mm.

Depth of body $2\frac{1}{5}$ in the length, length of head $3\frac{1}{2}$ to nearly 4. Snout a little shorter than eye, diameter of which is about $3\frac{2}{3}$ in length of head; interorbital width $2\frac{3}{4}$ to 3. Maxillary more or less exposed, extending to below anterior part of eye. Operculum, subopercular and interoperculum scaled; margin of praeoperculum denticulated. Gill-rakers nearly as long as the gill-filaments, about 15 on lower part of anterior arch. Scales small; lateral line not becoming straight until it reaches the caudal peduncle. Dorsal VII 32–33; fourth and seventh spines apparently longest. Anal III 21. Pectoral

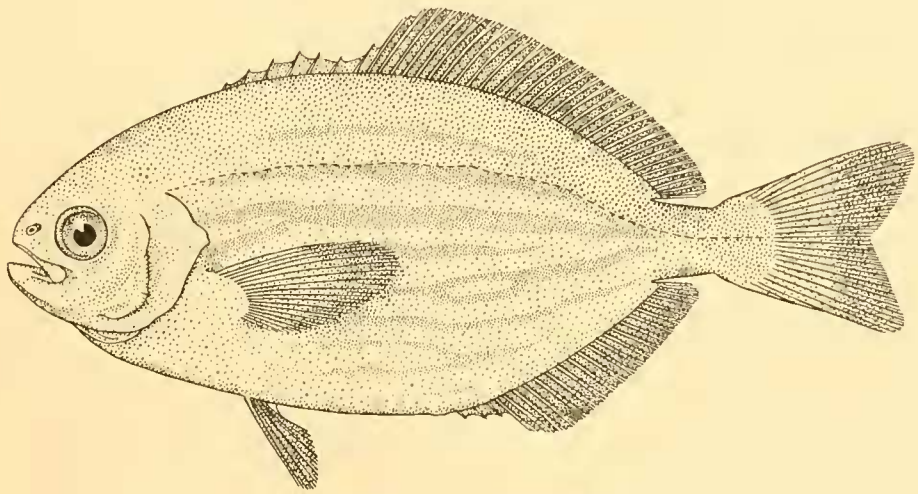

Fig. 64. *Palinurichthys griseolineatus*. Holotype. ×$\frac{1}{2}$.

nearly as long as head; pelvics inserted behind pectorals, length about $1\frac{1}{2}$ in that of head. Brownish above, silvery yellow below; sides of body with irregular greyish longitudinal stripes; dorsal, anal, pelvics, and the distal parts of the caudal and pectorals blackish.

Hab. Off the Atlantic coast of Patagonia.

Apparently related to *P. perciformis* (Mitchill) and *P. porosus* (Richardson), differing from both in the greater number of dorsal and anal rays, deeper body, smaller head, longer pectorals, etc.

The two species described above are somewhat tentatively placed in the genus *Palinurichthys*, Bleeker [= *Pammelas*, Günther], as the genera of Centrolophidae are badly in need of further revision. That the genus *Leirus* as defined by Regan (1902, *Ann. Mag. Nat. Hist.*, Ser. 7, x, p. 195) is capable of subdivision cannot be denied, but without an extensive and well-preserved series of specimens of the different species it is almost impossible to define the limits of the various groups. The changes undergone by many of the species of this family during growth are marked, and the material in

the National collection is quite inadequate for such a revision. Of the ten species of *Leirus* recognized by Regan, three are not represented in the British Museum, and five are represented only by two or three immature specimens. The form of the dorsal fin would appear to provide a useful character for the definition of genera within the family, but here the fragility of these fishes provides another difficulty in the way of a satisfactory revision, as many of the specimens in museums have the spinous part somewhat damaged, so that it is impossible to make out the exact form of the fin. Taking the key to the genus *Leirus* which appears in Regan's paper, it seems that the first division with the dorsal spines graduating to the higher soft rays forms a natural group—*Schedophilus*. This has been further subdivided by many authors into three genera: *Schedophilus*, Cocco (type *S. medusophagus*, Cocco); *Leirus*, Lowe (type *L. bennettii*, Lowe, a synonym of *Centrolophus ovalis*, Cuvier and Valenciennes);[1] and *Hoplocoryphis*, Gill (type *Schedophilus maculatus*, Günther). The second group, in which the dorsal spines are short and do not graduate to the higher soft rays, would then stand as *Palinurichthys*, Bleeker (type *Coryphaena perciformis*, Mitchill). This has been divided into three genera: *Ocycrius*, Jordan and Hubbs (type *Centrolophus japonicus*, Döderlein); *Palinurichthys*, Bleeker; and *Hyperoglyphe*, Günther (type *Diagramma porosa*, Richardson). The differences between these, however, seem to be slight, and may only be of specific importance. The genus *Centrolophus*, Lacepède, from which *Ectenias*, Jordan and Thompson, is doubtfully distinct, is closely related to *Leirus*, but may be distinguished by the elongated body and the maxillary slipping under the praeorbital for the entire length of its upper edge. The spines of the dorsal and anal fins are slender, indistinct and graduating. The genera *Nomeus*, *Cubiceps*, *Psenes*, *Seriolella*, *Psenopsis*, etc. have been well defined by Regan in the paper quoted above.

STROMATEIDAE

Stromateus maculatus, Cuvier and Valenciennes. "Pampanito"; "Cagavino".

1833, *Hist. Nat. Poiss.*, IX, p. 399; Jenyns, 1842, *Zool. 'Beagle'*, Fish., p. 74; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 248, pl. iii, fig. 1; Günther, 1860, *Cat. Fish.*, II, p. 398; Perugia, 1891, *Ann. Mus. Civ. stor. nat. Genova* (2) X [XXX], p. 615; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 42; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 299; Delfin, 1901, *Cat. Peces Chile*, p. 57; Regan, 1902, *Ann. Mag. Nat. Hist.* (7) X, p. 204; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 206; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 8; Evermann and Radcliffe, 1917, *Bull. U.S. Nat. Mus.*, XCV, p. 64; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 219.

St. WS 78. 13. iii. 27. 51° 01′ S, 68° 04′ 30″ W. Commercial otter trawl, 95–91 m.: 7 specimens, 290–375 mm.

St. WS 90. 7. iv. 27. 13 miles N 83° E of Cape Virgins Light, Argentine Republic. Commercial otter trawl, 82–81 m.: 4 specimens, 325–365 mm.

St. WS 217. 1. vi. 28. 46° 28′ S, 60° 18′ W. Commercial otter trawl, 146–146 m.: 1 specimen, 370 mm.

[1] *Leirus*, Lowe (1834) is preoccupied by *Leirus*, Megerle (1823), a genus of Coleoptera, and should perhaps be replaced by *Mupus*, Cocco.

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Commercial otter trawl, 87–82 m.: 4 specimens, 200–350 mm.

St. WS 788. 13. xii. 31. 45° 05′ S, 65° 00′ W. Commercial otter trawl, 82–88 m.: 1 specimen, 195 mm.

St. WS 847. 9. ii. 32. 50° 15′ 45″ S, 67° 57′ W. Commercial otter trawl, 51–56 m.: 5 specimens, 140–175 mm.

Depth of body $2\frac{1}{5}$ to 3 in the length, length of head 4 to $5\frac{1}{3}$. Snout longer than eye, diameter of which is 4 to $6\frac{1}{4}$ in length of head; interorbital width $2\frac{1}{3}$ to 3. Maxillary not reaching eye. 12 to 14 gill-rakers on lower part of anterior arch. Dorsal III–VII 40–47; anal III (–V) 37–44. Pectoral a little shorter than, as long as, or a little longer than head, its length $3\frac{3}{5}$ to $5\frac{1}{5}$ in that of fish (without caudal). Lobes of caudal about as long as head. Bluish above, silvery below; numerous round dark spots on the upper half of the body; distal parts of fins more or less blackish.

Hab. Both coasts of South America, from Uruguay to Chile and Peru; Falkland Islands; Juan Fernandez.

In addition to the above, there are 12 specimens in the British Museum collection from near the Falklands, 1 from Tierra del Fuego, 2 from off the coast of Uruguay (Marini), and 5 from Bahia de Coronel, Chile (Cavendish Bentinck).

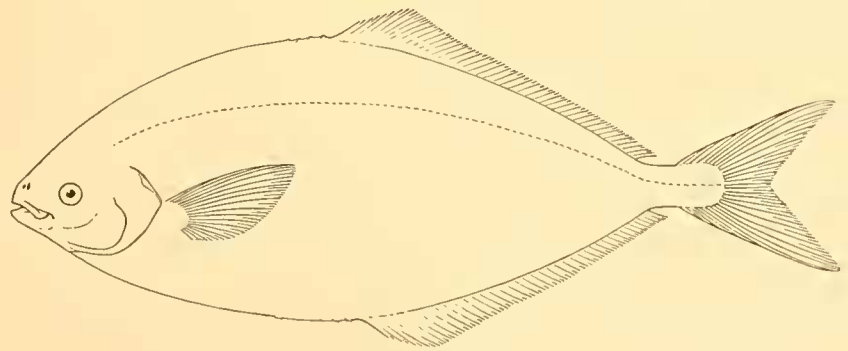

Fig. 65. *Stromateus maculatus.* $\times\frac{1}{3}$.

This species presents some variation in the depth of the body, length of the head, length of the pectoral fin, and in the number of spines in the dorsal fin, and it is possible that the examination of a large series of specimens would reveal the presence of two or more races or subspecies in South America. In 4 specimens (245–270 mm.) from Chile the head seems to be a little larger (4 to $4\frac{1}{4}$ in length of fish) and the pectoral fin rather longer ($3\frac{3}{5}$ to 4 in length of fish) than in the specimens from the Patagonian-Falklands region. There appears to be some doubt as to whether the species extends as far north as Peru on the Pacific coast, but Valenciennes states that it is common in the markets at Lima during May, June and July.

ATHERINIDAE

Genus Austromenidia, Hubbs[1]

1918, *Proc. Acad. N.S. Philad.*, LXIX (1917), p. 307; Jordan and Hubbs, 1919, *Studies in Ichthyol., Stanford Univ. Publ. Biol. Sci.*, p. 64. Type *Basilichthys regillus*, Abbott.

This is the genus generally known to South American authors as *Basilichthys*, and includes most of the large, fine-scaled Atherines of the south-temperate region of South America. The genotype of *Basilichthys*, Girard (1854, *Proc. Acad. N.S. Philad.*, VII, p. 198), is *Atherina microlepidota*, Jenyns, a species in which the praemaxillaries are not truly protractile, the skin being interrupted over the middle of the snout.[2]

Austromenidia smitti (Lahille).

Atherinichthys laticlavia (part), Günther, 1861, *Cat. Fish.*, III, p. 402.

Atherinichthys laticlavia (*non* Cuvier and Valenciennes), Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 471.

Atherinichthys microlepidotus (*non* Jenyns), Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 28.

Atherinichthys regia (*non* Humboldt), Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 31, pl. iv, figs. 30, 31.

Basilichthys laticlavia (*non* Cuvier and Valenciennes), Regan, 1913, *Trans. R. Soc. Edinb.*, XLIX, p. 237.

Basilichthys smitti, Lahille, 1929, *Revist. Chil.*, XXXIII, p. 84; Lahille, 1929, *Bol. Minist. Agric. Nac. Republ. Argentina*, XXVIII, p. 345, figs.; Lahille, 1929–31, *Anal. Mus. Nac. B. Aires*, XXXVI, p. 105, fig.

Basilichthys smitti var. *australis*, Lahille, 1929, *Revist. Chil.*, XXXIII, p. 89; Lahille, 1929, *Bol. Minist. Agric. Nac. Republ. Argentina*, XXVIII, p. 345, fig.

? *Basilichthys madrynensis*, Lahille, 1929, *t.c.*, p. 344, fig.

15. iii. 32. Port Madryn. Hand line, 2 m.: 3 specimens, 180–205 mm.

Depth of body 5 to 8 (young) in the length, length of head about 5. Snout from as long to $1\frac{3}{4}$ times as long as eye, diameter of which is $3\frac{1}{2}$ (young) to $5\frac{1}{2}$ in length of head and $1\frac{1}{4}$ to nearly twice in interorbital width. Jaws about equal anteriorly; maxillary not reaching vertical from anterior margin of eye; teeth in jaws rather small; vomerine teeth present. 20 to 30 gill-rakers on lower part of anterior arch. 92 to 104 scales in a longitudinal series. Dorsal VI–VII, I 10–12; origin of spinous dorsal well behind root of pelvic, about equidistant from base of caudal and end of snout or a little nearer to the latter. Anal I 17–20; last ray nearly directly opposite that of soft dorsal. Length of pectoral about $\frac{2}{3}$ that of head. Caudal forked; caudal peduncle $3\frac{1}{2}$ to 4 times as long as deep.

Hab. Coast of Patagonia; Falkland Islands; Straits of Magellan; southern Chile.

Mr Bennett has sent 11 specimens (145–270 mm.) of this species, taken at Port Stanley, Falklands, in the months of January, February and March, and there are

[1] *Odontesthes*, Evermann and Kendall, is a closely related genus, but has the head more pike-like and pointed, and the spinous dorsal is situated above the anterior part of the anal.

[2] See Eigenmann (1928, *Mem. Nat. Acad. Sci. Washington*, XXII, No. 2, p. 53) for a full discussion of the status of *Basilichthys*.

11 other specimens (68–300 mm.) in the British Museum collection from the Falklands and the Straits of Magellan.

The specimens obtained by the 'William Scoresby' mentioned above agree very well with the form described by Lahille as *Basilichthys madrynensis*, but it seems doubtful whether this is more than a local race of *Austromenidia smitti*.

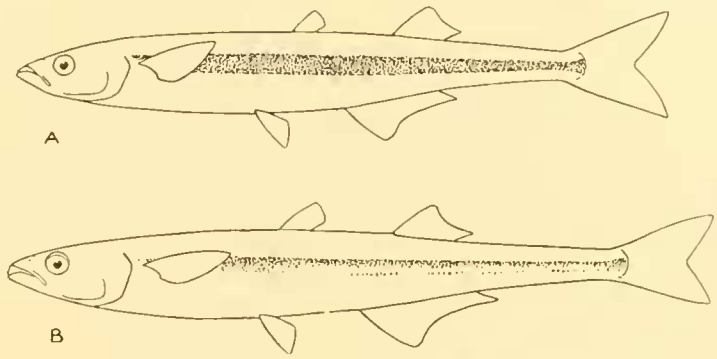

Fig. 66. A, *Austromenidia smitti*; B, *Austromenidia nigricans*. × $\frac{1}{2}$.

A. smitti is closely related to *A. laticlavia* (Cuvier and Valenciennes), from Chile, but may be readily distinguished by the smaller scales. Lahille recognizes two forms of this species: the typical *smitti* from Golfo Nuevo and Golfo San Matias, and *australis* from the southernmost parts of the Atlantic and Pacific coasts of South America.

Austromenidia nigricans (Richardson).

Atherina nigricans, Richardson, 1848, *Zool. 'Erebus' and 'Terror'*, Fishes, p. 77, pl. xlii, figs. 13–18.

Atherinichthys nigricans, Günther, 1861, *Cat. Fish.*, III, p. 403; Smitt, 1898, *Bih. Sv. Vet.-Akad. Handl.*, XXIV, IV, No. 5, p. 29, pl. iv, fig. 29.

Atherinichthys alburnus, Günther, 1861, *Cat. Fish.*, III, p. 404; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 471.

Menidia patagoniensis, Eigenmann, 1909, *Rep. Princeton Univ. Exped. Patagonia*, III, p. 280.

Menidia alburnus, Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 423.

Austromenidia nigricans, Jordan and Hubbs, 1919, *Studies in Ichthyol., Stanford Univ. Publ. Biol. Sci.*, p. 67.

Basilichthys nigricans, Lahille, 1929, *Bol. Minist. Agric. Nac. Republ. Argentina*, XXVIII. p. 345, fig.

Basilichthys nigricans var. *macropterus*, Lahille, 1929, *t.c.*, p. 346, fig.

Depth of body $5\frac{3}{4}$ to 7 (young) in the length, length of head $4\frac{1}{2}$ to 5. Snout from as long to $1\frac{3}{4}$ times as long as eye, diameter of which is $3\frac{1}{2}$ (young) to $4\frac{3}{4}$ in length of head and $1\frac{1}{4}$ to $1\frac{3}{4}$ in interorbital width. Jaws about equal anteriorly; maxillary extending to or nearly to vertical from anterior margin of eye; teeth in jaws rather small; vomerine teeth generally present. 12 to 16 gill-rakers on lower part of anterior arch. 90 to 105 scales in a longitudinal series. Dorsal VI–VII, I 10–12; origin of spinous dorsal a little behind root of pelvic and nearer to end of snout than to base of caudal. Anal I 17–20; last ray a little behind that of soft dorsal. Length of pectoral about $\frac{3}{4}$ that of head. Caudal more or less emarginate; caudal peduncle about 4 times as long as deep.

Hab. Patagonian-Falklands region; Straits of Magellan; southern Chile.

No specimens of this species were obtained by the Discovery Expedition, but Mr Bennett has sent 40 specimens (55–185 mm.) from Stanley, Falklands, as well as 8 others (55–75 mm.) from the West Falklands, collected by Mr Hamilton in March, 1932. There are also 8 specimens in the British Museum collection: the type of the species (135 mm.) from the Falklands; the 4 types of *Atherinichthys alburnus* (120–185 mm.) from the Straits of Magellan; 2 specimens (170, 175 mm.) from Sandy Point (Cunningham); and 1 specimen (170 mm.) from Magellan ('Albatross').

The two species described above, both of which are known in the Falkland Islands as "smelt", have been well distinguished by Smitt and Lahille, and Mr Bennett notes that one has a brownish back, the other a bluish. Unfortunately, the specimens sent by him have faded in spirit and it is now impossible to say which of the species has the brown back and which the blue. Mr Bennett points out that the "smelt" is erratic in its movements, and appears in shoals. "The large fish appear to spawn about September or October", he writes, "and in one instance known to me the spot selected was a shallow mud bank in a well-protected and moderately quiet inlet." It is regarded as the best table fish in the Falklands, and occasionally grows to a length of 22 in.

SCORPAENIDAE

Sebastodes oculatus (Cuvier and Valenciennes). "Cabrilla."

Sebastes oculata, Cuvier and Valenciennes, 1833, *Hist. Nat. Poiss.*, IX, p. 466; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 178, pl. iii, fig. 2; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 468; Günther, 1880, *Shore Fish.* '*Challenger*', p. 20.

Sebastes ocellatus, Valenciennes, 1850, in Cuvier, *R. Anim.*, Disciples Ed., Poiss., pl. xxiii, fig. 3.

Sebastes capensis (part), Steindachner, 1881, *SitzBer. Akad. Wiss. Wien*, LXXXIII (1), p. 216.

Sebastodes oculatus, Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (2), p. 1832; Delfin, 1901, *Cat. Peces Chile*, p. 78; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 205.

? *Sebastodes darwini*, Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 8.

5. v. 31. Fortune Bay, Baverstock Island. Hand line, 22 m.: 2 specimens, 255, 285 mm.

St. WS 800. 21–22. xii. 31. 48° 15′ 45″ S, 62° 09′ 52″ W. Commercial otter trawl, 137–139 m.: 1 specimen, 295 mm.

St. WS 813. 13. i. 32. 51° 35′ 15″ S, 67° 16′ 15″ W. Commercial otter trawl, 106–102 m.: 1 specimen, 400 mm.

Depth of body about 3 in the length, length of head $2\frac{1}{3}$ to $2\frac{2}{3}$. Snout as long as or a little longer than eye, diameter of which is 4 to $4\frac{3}{4}$ in length of head; interorbital width $\frac{3}{5}$ to $\frac{3}{4}$ diameter of eye. Maxillary extending to below posterior part of eye. 19 to 21 gill-rakers on lower part of anterior arch. Dorsal XIII 13 or 14; fifth or sixth spines longest, their length $2\frac{3}{5}$ to 3 in that of head. Anal III 6 (occasionally 7). Pectoral with 9 + 9 or 10 rays, its length $1\frac{2}{5}$ to $1\frac{2}{3}$ in that of head. Pelvics nearly or quite reaching vent. Brownish; the back mottled with darker, the pigment tending to be concentrated into 4 or 5 dark blotches; 4 or 5 more or less definite rounded pale (pink in life) spots on each side, 3 or 4 immediately below the dorsal fin and another on the lateral line about level with the eighth and ninth dorsal spines; membrane of dorsal fin more or less dusky.

Hab. Patagonian-Falklands region; Straits of Magellan; coast of Chile.

In addition to the above, there are 5 specimens (220–320 mm.) in the British Museum collection from the Straits of Magellan, Fortune Bay, Messier Channel and Tambo River.

Sebastodes chilensis, Steindachner, of which there are 4 specimens (225–340 mm.) in the British Museum, is doubtfully distinct from *S. oculatus*. The shape of the spinous dorsal fin appears to be a little different, however, the longest spines being 3 to $3\frac{1}{3}$ in the length of the head. In the two larger specimens the coloration is considerably darker, but careful examination reveals the presence of traces of the characteristic pale spots, which are quite clear in the two smaller examples. I have not seen specimens of *S. darwini*, Cramer, from Chile and Peru, but this species is very closely related to the above.

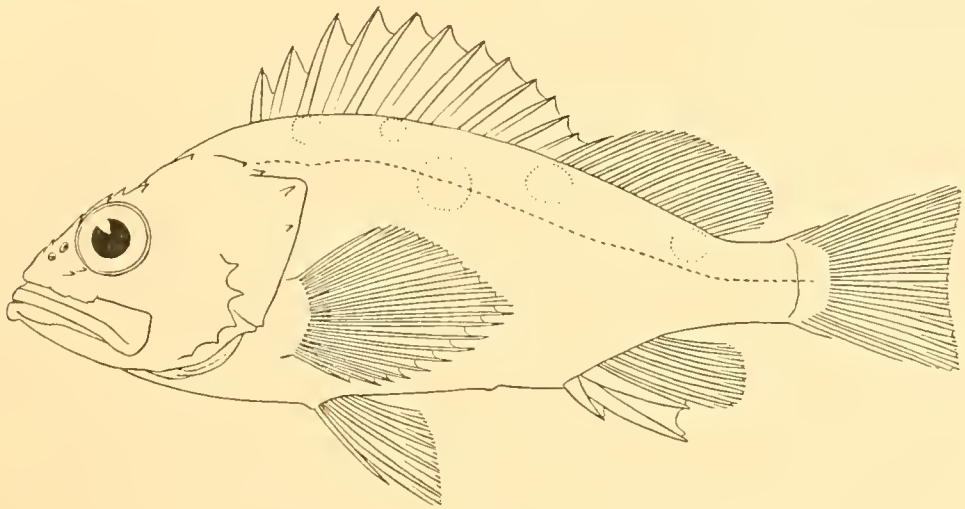

Fig. 67. *Sebastodes oculatus*. $\times\frac{1}{2}$.

Steindachner (1881) regarded *S. oculatus* as identical with the earlier described *S. capensis* (Gmelin), and there is no doubt that the two forms are barely separable. I have examined 8 specimens of *S. capensis* from South Africa, Tristan da Cunha, and Gough Island, and find that the only reliable difference between these and the examples from the Magellan region lies in the shape of the spinous dorsal fin. In the Cape species the third to fifth spines appear to be the longest, the length being $3\frac{1}{4}$ to nearly 4 in that of head.

In recent years American authors have tended to divide the large genus, *Sebastodes*, which contains a number of species from the coasts of California, Alaska and Japan, as well as a few from the Pacific coast of South America, into a number of genera. The differences between these, however, are slight and not always constant, and I have preferred to use the name *Sebastodes* in the wider sense of Jordan and Evermann (1898). Barnard has placed the species from South Africa, originally described as *Scorpaena capensis*, in the genus *Sebastichthys*, Gill, pointing out that this is closely allied to *Sebastodes*, differing in the short gill-rakers and narrow, concave interorbital space.

Helicolenus lahillei, sp.n. "Rouget."

Helicolenus dactylopterus (*non* Delaroche), Lahille, 1913, *Anal. Mus. Nac. B. Aires*, XXIV, p. 5, pl. ii; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 249; Fowler, 1927, *Proc. Acad. N.S. Philad.*, LXXVIII, p. 272.

Depth of body about 3 in the length, length of head $2\frac{3}{5}$ to $2\frac{4}{5}$. Snout shorter than eye, diameter of which is about 3 in length of head and $2\frac{2}{5}$ times the interorbital width. Praeorbital spines feeble; suborbital ridge with a small spine below the posterior edge of the eye; 5 praeopercular spines; a pair of spines on the snout between the nostrils, a spine above the front of each orbit, and 3 above its posterior angle; 2 pairs of spines on the occipital region. Maxillary with a large patch of scales, extending to below hinder part of eye. Gill-rakers of moderate length, the longest nearly $\frac{1}{2}$ diameter of eye; 19 or 20 on lower part of anterior arch. 4 or 5 series of scales between last soft-ray of dorsal and lateral line. Dorsal XII 12; third (or fourth) spine longest, about $\frac{1}{2}$ as long

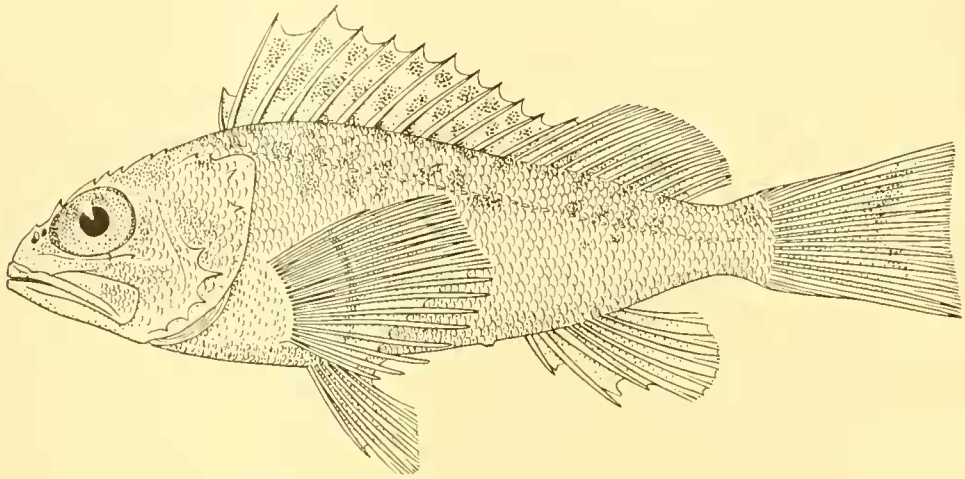

Fig. 68. *Heliocolenus lahillei*. Holotype. $\times\frac{3}{4}$.

as head. Anal III 5. Pectoral with 19 rays, the 2 uppermost simple, the next 9 branched, and the 8 lowermost simple; fin extending to above the vent. Pelvic fin scarcely reaching the vent. Pale yellowish-brown (red in life); upper parts of sides more or less spotted or mottled with dark brown; membrane of spinous dorsal with dark spots and blotches; lining of body cavity and of branchial chamber black.

Hab. Coasts of Uruguay and northern Argentina.

Described from 2 specimens, 155 and 172 mm. in total length, from off the coast of Uruguay (35° S, 53° W), received from Dr Marini. The larger of these is selected as the holotype.

This fish, of which a coloured figure has been published by Lahille, has been identified by South American authors with *Helicolenus dactylopterus* (Delaroche), from the Mediterranean and adjacent parts of the Atlantic. Comparing the two small specimens described above with some of the European species of similar size, they appear to be distinguished chiefly by the more numerous gill-rakers, rather larger scales, and the higher dorsal spines. *H. lahillei* is also closely related to *H. maculatus*

from South Africa, but has a smaller eye, wider interorbital region, and somewhat shorter pectoral and pelvic fins.[1] A small specimen (94 mm.) from Gough Island, obtained by the 'Scotia', is very similar to young examples of *H. maculatus*, but it is possible that this also belongs to an undescribed species.

Helicolenus lengerichi, sp.n.

St. WS 742. 5. ix. 31. 38° 22′ S, 73° 41′ W. Small beam trawl, 35 m.: 1 specimen, 88 mm.

Closely related to *H. maculatus* and *H. lahillei*. Depth of body $3\frac{1}{6}$ in the length, length of head $2\frac{1}{2}$. Snout a little shorter than eye, diameter of which is about $3\frac{3}{4}$ in length of head and twice the interorbital width. Interorbital region with a shallow groove. Maxillary extending nearly to below posterior edge of pupil. Longest gill-rakers about $\frac{1}{4}$ diameter of eye; 21 gill-rakers on lower part of anterior arch. 5 series of scales between

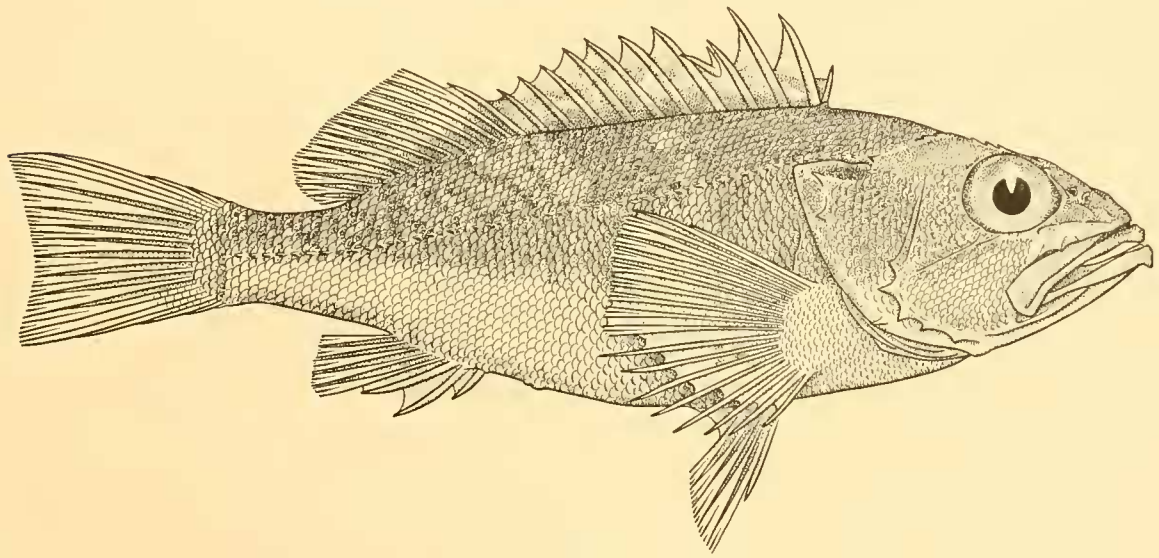

Fig. 69. *Helicolenus lengerichi*. Holotype. $\times\frac{2}{3}$.

last soft-ray of dorsal and lateral line. Dorsal XII 12; third (or fourth?)[2] spine longest, about $\frac{1}{3}$ as long as head. Anal III 5. Pectoral with 19 rays, the 2 uppermost simple, the next 9 branched, and the 8 lowermost simple and somewhat thickened; the fin does not nearly reach the level of the vent. Pelvic about $\frac{1}{2}$ as long as head, extending about as far as pectoral. Caudal peduncle a little longer than deep. Pale reddish-brown; upper parts of head and body spotted and marbled with darker; an irregular dark blotch at upper angle of gill-opening; dorsal irregularly marked with dusky; other fins uniformly pale; lining of body cavity and branchial chamber black.

Hab. Chile; Juan Fernandez.

Described from a single specimen, 390 mm. in total length, the holotype of the species; collected at Juan Fernandez by Dr Lengerich and forwarded to the British

[1] I am indebted to Dr K. H. Barnard of the South African Museum for several small specimens (125–205 mm.) of *H. maculatus* for comparison with the types of *H. lahillei*.

[2] This spine is abnormally formed in the holotype.

Museum by Mr Cavendish Bentinck. The small specimen obtained by the 'William Scoresby' probably belongs to the same species.

Distinguished from *H. maculatus* and *H. lahillei* chiefly by the somewhat larger head, the rather broader and more deeply grooved interorbital region, the more slender caudal peduncle, the smaller scales, and the shorter pectoral and pelvic fins. From *H. papillosus* (Schneider), of which *H. percoides* (Richardson) is a synonym, from Australia and New Zealand, it may be distinguished by the larger head, larger eye, more numerous gill-rakers, shorter pectoral and pelvic fins, and by the different coloration.

CONGIOPODIDAE

Congiopodus peruvianus (Cuvier and Valenciennes).

"Tchirs mammachou"; "Peje chancho".

Agriopus peruvianus, Cuvier and Valenciennes, 1829, *Hist. Nat. Poiss.*, IV, p. 389; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 181, pl. ii*b*, fig. 1; Valenciennes, 1850, in Cuvier, *R. Anim.*, Disciples Ed., Poiss., pl. xxv, fig. 1; Günther, 1860, *Cat. Fish.*, II, p. 138; Günther, 1881, *Proc. Zool. Soc.*, p. 20; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 60; Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 297; Delfin, 1901, *Cat. Peces Chile*, p. 80; Steindachner, 1903, *Zool. Jahrb.*, Suppl. VI, p. 205; Evermann and Radcliffe, 1917, *Bull. U.S. Nat. Mus.*, XCV, p. 139; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 250.

Agriopus hispidus, Jenyns, 1842, *Zool. 'Beagle'*, Fish., pp. 38, 163, pl. vii, fig. 2; Günther, 1860, *Cat. Fish.*, II, p. 139; Cunningham, 1871, *Trans. Linn. Soc. London*, XXVII, p. 469; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI. Zool., Poiss., p. 31; Delfin, 1901, *Cat. Peces Chile*, p. 81.

Agriopus alboguttatus, Kroyer, 1844, *Naturhist. Tidsskrift* [2] I (3), p. 224; Günther, 1860, *Cat. Fish.*, II, p. 139; Delfin, 1901, *Cat. Peces Chile*, p. 80.

Agriopus peruanus, Abbott, 1899, *Proc. Acad. N.S. Philad.*, p. 361.

St. WS 217. 1. vi. 28. 46° 28′ S, 60° 18′ W. Commercial otter trawl, 146–146 m.: 2 specimens, 220, 240 mm.

St. WS 774. 1. xi. 31. 47° 08′ S, 62° 02′ W. Commercial otter trawl, 139–144 m.: 1 specimen, 160 mm.

St. WS 790. 14. xii. 31. 45° 28′ 52″ S, 63° 40′ 37″ W. Commercial otter trawl, 99–101 m.: 1 specimen, 185 mm.

St. WS 791. 14. xii. 31. 45° 38′ 45″ S, 62° 55′ W. Commercial otter trawl, 97–96 m.: 1 specimen, 200 mm.

St. WS 792. 15. xii. 31. 45° 49′ 30″ S, 62° 20′ 15″ W. Commercial otter trawl, 102–106 m.: 9 specimens, 115–210 mm.

St. WS 794(?). 17. xii. 31. 46° 12′ 37″ S, 60° 59′ 15″ W. Commercial otter trawl, 123–126 m.: 1 specimen, 285 mm.

Depth of body $2\frac{3}{4}$ to 3 in the length, length of head $3\frac{1}{5}$ to $3\frac{1}{2}$. Snout longer than eye, diameter of which is 4 (young) to 5 in length of head and about $1\frac{1}{2}$ times the narrowest part of the interorbital width. A pair of spines on the snout in front of the eyes, becoming less marked with age; granular areas in front of, above, below, and behind the eyes, and on praeopercular and temporal regions, sometimes obscured by thick skin in adults; only the upper part of the interorbital region rough. Skin covered with minute horny tubercles in the young, becoming quite smooth in examples of 100 mm. and upwards in length. A more or less distinct lateral line. Lips thick and fleshy; teeth villiform,

sometimes forming a band in each jaw, sometimes arranged in 1 or 2 irregular rows; the teeth are often difficult to see owing to the fleshy nature of the gums. About 11 gill-rakers on lower part of anterior arch. Dorsal XVI–XVII 13–14; fourth to sixth spines longest, $\frac{2}{3}$ to $\frac{3}{4}$ as long as head; last spine $\frac{3}{5}$ to $\frac{3}{4}$ as long as the first soft-ray. Anal 8–10. Yellowish brown, variously spotted and marbled with black; often a more distinct pale stripe bordered with dark brown or black in the region of the lateral line; head and fins in the young often with pale dots; membrane of anterior part of spinous dorsal black, a black blotch on the upper part of the fin in the region of the sixth to ninth spines, and usually another in the region of the last four or five spines; in the young these two blotches are united and the upper part of the fin is black from the sixth spine to the last; an oblique dark blotch on soft-rays of dorsal fin; a rather broad, curved dark cross-bar on the caudal; a large black blotch on the pectoral and another

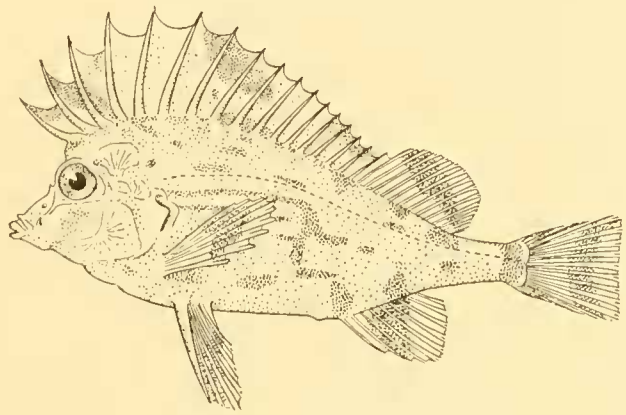

Fig. 70. *Congiopodus peruvianus*. × $\frac{1}{2}$.

on the pelvic; sometimes in adults the head, body and fins are all dark brown, the black spots and markings being nearly obscured.

Hab. Both coasts of southern South America, from Uruguay to Peru.

In addition to the above, there are 16 specimens (40–250 mm.) in the British Museum collection from the Straits of Magellan, west coast of Patagonia, and the coasts of Chile and Peru.

There can be little doubt that the small examples with horny tubercles (*hispidus*) represent the young of *C. peruvianus*, as was suspected by Jenyns himself. In 2 specimens examined by me, 40 and 44 mm. long, the body is thickly covered with tubercles, and these examples agree very well with Jenyns' description and figure of *hispidus*. In a specimen of 66 mm., labelled *Agriopus alboguttatus*, the tubercles are fewer and more scattered. All these specimens show faint traces of the pale dots mentioned by Krøyer in his description of *A. alboguttatus*, the type of which was about 63 mm. in total length.

Hutton (1896, *Trans. N. Zeal. Inst.*, XXVIII, p. 314) has recorded this species from New Zealand, but examination of 2 specimens (135, 142 mm.) in the British Museum, received from Hutton himself, shows that these are young examples of *C. leucopoecilus* (Richardson), a species readily distinguished from *C. peruvianus* by the more slender

body, more oblique profile of the snout, more rugose head, higher dorsal spines, and by the coloration.

McCulloch (1926, *Rec. Austral. Mus.*, xv, p. 37) has discussed the status of the genus *Congiopodus*, Perry, and has given good reasons for using this name instead of *Agriopus*.

PSYCHROLUTIDAE

Neophrynichthys marmoratus, Gill.

Neophrynichthys latus (*non* Hutton), Günther, 1881, *Proc. Zool. Soc.*, p. 20, pl. i; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 11.

Neophrynichthys marmoratus, Gill, 1889, *Proc. U.S. Nat. Mus.*, xi (1888), p. 327.

Besnardia gyrinops, Lahille, 1913, *Anal. Mus. Nac. B. Aires*, xxiv, p. 3, pl. i, text-fig. 1.

Neophrynichthys marmoratus, Regan, 1913, *Trans. R. Soc. Edinb.*, xlix, p. 241.

St. WS 93. 9. iv. 27. 7 miles S 80° W of Beaver Island, West Falkland Islands. Commercial otter trawl, 133–130 m.: 1 specimen, 110 mm.

St. WS 97. 18. iv. 27. 49° 00′ 30″ S, 61° 58′ W. Commercial otter trawl, 146–145 m.: 1 specimen, 165 mm.

St. WS 583. 2. v. 31. 53° 39′ S, 70° 54′ 30″ W. Small beam trawl, 14–78 m.: 1 specimen, 100 mm.

As Regan has pointed out, this species may be distinguished by the greater development of the dermal appendages on the head and anterior part of the body, which are much longer and set further apart than in *N. latus* from New Zealand. In addition,

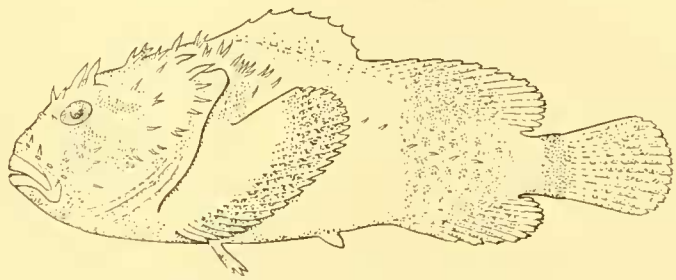

Fig. 71. *Neophrynichthys marmoratus*. × ½.

the interorbital region is much narrower, the caudal fin more rounded, and the coloration different. The dorsal rays number IX–X 15–16, the anal rays 11 or 12.

Hab. Coasts of south-eastern South America, from the Rio Plata to the Straits of Magellan.

There are 2 large specimens (320, 390 mm.) in the British Museum from the Straits of Magellan—the types of Regan's *N. marmoratus*—and the 'Scotia' obtained a smaller example (160 mm.) from the Burdwood Bank in 56 fathoms. The type of *Besnardia gyrinops* is 337 mm. in total length: this fish is said to be known locally as "Gran sapo de Mar".

The form of the pelvic fins in this species is of some interest. These appear to arise from a pocket-like fold of the skin, and in preserved specimens the fins may be completely everted, presenting a normal appearance, or may be withdrawn so that only the tips project through the opening of the pocket. An exactly similar state of affairs is found in the Pediculate fish *Chaunax pictus*.

AGONIDAE

Agonopsis chiloensis (Jenyns). "Aayakich."

Aspidophorus chiloensis, Jenyns, 1842, *Zool.* '*Beagle*', Fish., p. 30, pl. vii, fig. 1; Guichenot, 1848–9, in Gay, *Hist. Chile*, Zool. II, p. 174.

Aspidophorus niger, Kroyer, 1844, *Naturhist. Tidsskrift* [2] I (3), p. 238.

Agonus niger, Günther, 1860, *Cat. Fish.*, II, p. 215.

Agonus chiloensis, Günther, 1860, *t.c.*, p. 216; Günther, 1880, *Shore Fish.* '*Challenger*', p. 21; Vaillant, 1888, *Miss. Sci. Cap Horn*, VI, Zool., Poiss., p. 31; Lahille, 1913, *Revist. Chil.*, XVII, p. 179, pl. xv.

Agonopsis chiloensis, Gill, 1862, *Proc. Acad. N.S. Philad.* (1861), p. 167; Jordan and Evermann, 1898, *Bull. U.S. Nat. Mus.*, XLVII (2), p. 2069; Delfin, 1901, *Cat. Peces Chile*, p. 81.

Agonopsis asperoculis, Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 409, pl. ii, fig. 1.

St. WS 71. 23. ii. 27. 6 miles N 60° E of Cape Pembroke Light, East Falkland Islands. Commercial otter trawl, 82 m.: 20 specimens, 95–120 mm.

St. WS 81. 19. iii. 27. 8 miles N 11° W of North Island, West Falkland Islands. Commercial otter trawl, 81–82 m.: 2 specimens, 60, 115 mm.

St. WS 83. 24. iii. 27. 14 miles S 64° W of George Island, East Falkland Islands. Commercial otter trawl, 137–139 m.: 4 specimens, 105–125 mm.

St. WS 93. 9. iv. 27. 7 miles S 80° W of Beaver Island, West Falkland Islands. Commercial otter trawl, 133–130 m.: 1 specimen, 115 mm.

St. WS 95. 17. iv. 27. 48° 58′ 15″ S, 64° 45′ W. Commercial otter trawl, 109–108 m.: 4 specimens, 140–150 mm.

St. WS 216. 1. vi. 28. 47° 37′ S, 60° 50′ W. Net (7 mm. mesh) attached to back of trawl, 219–133 m.: 1 specimen, 35 mm.

St. WS 219. 3. vi. 28. 47° 06′ S, 62° 12′ W. Net (7 mm. mesh) attached to back of trawl, 116–114 m.: 3 specimens, 33–50 mm.

St. WS 221. 4. vi. 28. 48° 23′ S, 65° 10′ W. Tow-net attached to back of trawl, 76–91 m.: 1 specimen, 40 mm.

St. WS 243. 17. vii. 28. 51° 06′ S, 64° 30′ W. Net (7 mm. mesh) attached to back of trawl, 144–141 m.: 1 specimen, 140 mm.

St. WS 583. 2. v. 31. 53° 39′ S, 70° 54′ 30″ W. Small beam trawl, 14–78 m.: 5 specimens, 108–130 mm.

St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 1 specimen, 82 mm.

St. WS 754. 20 ix. 31. 51° 09′ 30″ S, 58° 54′ W. Rectangular net, 111 m.: 3 specimens, 60–66 mm.

St. WS 767. 19. x. 31. 45° 12′ S, 61° 41′ W. Rectangular net, 98 m.: 1 specimen, 135 mm.

St. WS 787. 7. xii. 31. 48° 44′ S, 65° 24′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 106–110 m.: 3 specimens, 115–143 mm.

St. WS 836. 3. ii. 32. 53° 05′ 30″ S, 67° 38′ W. Small beam trawl, 64 m.: 1 specimen, 80 mm.

Hab. Argentina; Patagonian-Falklands region; Straits of Magellan; Chile.

In addition to the above, there are 9 specimens (37–190 mm.) in the British Museum collection, including the types of the species (62 and 63 mm.) from the Chiloe Islands.

A. asperoculis, Thompson, based upon a single specimen (60 mm.) from just south of the Rio Plata, is said to differ from *A. chiloensis* in "the much more slender tail; the wider spacing of the dorsals, which are five instead of two scales apart; the presence of a series of small spines on the upper surface of the eyeball; the slightly larger eye; the very much smaller barbels on the lower jaw; and the position of the vent nearly opposite mid-length of the ventrals". After examining a series of some 55 specimens,

I find that nearly all these characters are subject to considerable variation. The caudal peduncle is from 4 to 7 times as long as deep; the two dorsal fins are separated by from 2 to 5 scales; the series of small spines on the eyeball is present in all the specimens, including the types of *A. chiloensis*; the diameter of the eye is 3 to $4\frac{1}{4}$ in the length of the head; the interorbital width is $\frac{3}{5}$ to $\frac{7}{8}$ of the diameter of the eye; the number and size of the barbels varies exceedingly; and the vent is sometimes opposite to the middle,

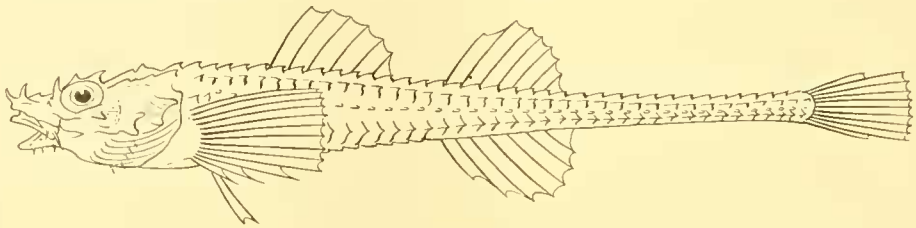

Fig. 72. *Agonopsis chiloensis.* $\times\frac{3}{4}$.

sometimes opposite to the posterior parts of the pelvic fins. The form and extent of the spines on the head and body is also subject to some variation. There are nearly always 5 or 6 distinct dark cross-bars on the back, with other less definite dark markings on the sides and on the nape; the pectoral fin has a broad dark cross-bar distally and another across its base; the caudal has 2 similar bars and a narrow pale posterior margin; the dorsal fins are plain or irregularly marked with darker; the anal is similar, or sometimes with some vivid white patches; the barbels are all pure white.

LIPARIDAE

Careproctus falklandica (Lönnberg).

Liparis antarctica falklandica, Lönnberg, 1905, *Wiss. Ergebn. Schwed. Südpol.-Exped.*, v (6), p. 17, pl. iii, fig. 12.

Careproctus falklandica, Burke, 1912, *Ann. Mag. Nat. Hist.* (8) ix, p. 513; Burke, 1930, *Bull. U.S. Nat. Mus.*, cl, p. 116.

St. WS 89. 7. iv. 27. 9 miles N 21° E of Arenas Point Light, Tierra del Fuego. Commercial otter trawl, 23–21 m.: 6 specimens, 30–53 mm.

Hab. Falkland Islands; Burdwood Bank; Straits of Magellan.

This species is closely related to *C. pallidus* (Vaillant) from Orange Bay, but the latter is said to have only 20 rays in the pectoral fin, which is apparently not notched. The type of *C. pallidus* is 42 mm. in total length.

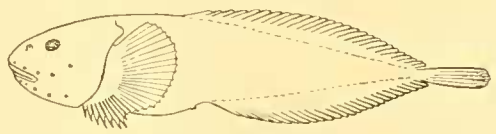

Fig. 73. *Careproctus falklandica.* $\times 1\frac{1}{2}$.

According to a note on the label, the specimens collected by the 'William Scoresby' were pale orange in colour during life.

Paraliparis, sp.

The following specimens are in very poor condition and cannot be specifically identified:

St. WS 748. 16. ix. 31. 53° 41′ 30″ S, 70° 55′ W. Rectangular net, 300 m.: 1 specimen, 42 mm.
St. WS 749. 18. ix. 31. 52° 39′ 30″ S, 69° 53′ 30″ W. Rectangular net, 40 m.: 1 specimen, about 44 mm.

BOTHIDAE[1]

Thysanopsetta naresi, Günther.

1880, *Shore Fish.* '*Challenger*', p. 22, pl. xi, fig. A; Delfin, 1901, *Cat. Peces Chile*, p. 104; Dollo, 1904, *Rés. Voy.* '*Belgica*', Poiss., p. 91; Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 14; Norman, 1930, *Discovery Reports*, II, p. 358; Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 64, fig. 33.

St. 51, St. WS 77, St. WS 90–92, St. WS 96–97, St. WS 216, St. WS 219, St. WS 222. Patagonian-Falklands-Magellan region: 58 specimens, 34–142 mm.

The following additional specimens have come to light since the publication of my previous report:

St. WS 80. 14. iii. 27. 50° 57′ S, 63° 37′ 30″ W. Commercial otter trawl, 152–151 m.: 1 specimen, 62 mm.
St. WS 94. 16. iv. 27. 50° 00′ 15″ S, 64° 57′ 45″ W. Commercial otter trawl, 110–126 m.: 1 specimen, 60 mm.
St. WS 96. 17. iv. 27. 48° 00′ 45″ S, 64° 58′ W. Commercial otter trawl, 96 m.: 7 specimens, 35–38 mm. [Taken from stomach of *Merluccius hubbsi*.]
St. WS 742. 5. xi. 31. 38° 22′ S, 73° 41′ W. Small beam trawl, 35 m.: 1 specimen, 109 mm.
St. WS 787. 7. xii. 31. 48° 44′ S, 65° 24′ 30″ W. Net (7 mm. mesh) attached to back of trawl, 106–110 m.: 29 specimens, 58–115 mm.
St. WS 791. 14. xii. 31. 45° 41′ 45″ S, 62° 45′ W. Commercial otter trawl, 96–101 m.: 2 specimens, 115–132 mm.
St. WS 795. 18. xii. 31. 46° 14′ S, 60° 24′ W. Net (7 mm. mesh) attached to back of trawl, 157–161 m.: 12 specimens, 55–135 mm.
St. WS 796. 19. xii. 31. 47° 49′ 37″ S, 63° 42′ 30″ W. Nets attached to back of trawl, 106–113 m.: 12 specimens, 120–130 mm.
St. WS 797. 20. xii. 31. 47° 45′ 18″ S, 64° 10′ 30″ W. Nets attached to back of trawl, 115–112 m.: 13 specimens, 35–42 mm.
St. WS 808. 8. i. 32. 49° 40′ 15″ S, 65° 42′ W. Seine net attached to back of trawl, 109–107 m.: 40 specimens, 60–102 mm.
St. WS 809. 8. i. 32. 49° 28′ 15″ S, 66° 29′ W. Seine net attached to back of trawl, 107–104 m.: 1 specimen, 88 mm.

Hab. Patagonian-Falklands region; Straits of Magellan; southern Chile northwards to Mocha Island.

In addition to the above, there are 3 specimens in the British Museum collection from off Cape Virgins, Argentina, including the type of the species (175 mm.). The specimens collected by the Discovery Expedition fit very well into the description given in my monograph, except that the range in the number of dorsal and anal rays is greater. The number of dorsal rays varies from 78 to 90, the number of anal rays

[1] Some of the Heterosomata have been dealt with in a previous report. For the sake of completeness, the species from this region are listed again here.

from 57 to 66. The single specimen taken at Mocha Island extends the known range of the species considerably further north on the Chilean coast. This specimen is much darker than most of the others, the coloration being blackish with numerous small, scattered, pale spots. In the young of this species the head and body are covered with a large number of small dark brown spots.

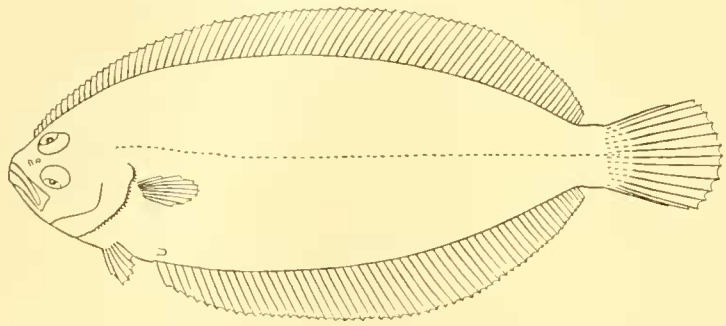

Fig. 74. *Thysanopsetta naresi*. $\times \frac{3}{4}$.

Hippoglossina macrops, Steindachner.

1876, *SitzBer. Akad. Wiss. Wien*, LXXIV (1), p. 13, pl. iii; Abbott, 1899, *Proc. Acad. N.S. Philad.*, p. 475.

? *Hippoglossina macrops* (part), Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 14.

St. WS 742. 5. ix. 31. 38° 22′ S, 73° 41′ W. Small beam trawl, 35 m.: 1 specimen, 123 mm.

Depth of body $2\frac{2}{5}$ in the length, length of head about 3. Snout shorter than eye, diameter of which is about 4 in length of head. Maxillary extending to below middle of eye. 12 gill-rakers on lower part of anterior arch. About 78 scales in the lateral line; scales on blind side ctenoid only on the posterior part of the body. Dorsal (66–67) 69; anal (52) 56. Pectoral of ocular side with 12 rays, length about $\frac{1}{2}$ that of head. Caudal rounded; caudal peduncle a little deeper than long.

Hab. Coast of Chile.

Hippoglossina mystacium, Ginsburg.

Hippoglossina macrops (*non* Steindachner), Günther, 1881, *Proc. Zool. Soc.*, p. 21; Thompson, 1916, *Proc. U.S. Nat. Mus.*, L, p. 424; Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 67, fig. 35.

? *Hippoglossina macrops* (part), Lönnberg, 1907, *Hamb. Magalh. Sammelr.*, Fische, p. 14.

Hippoglossina mystacium, Ginsburg, 1936, *J. Wash. Acad. Sci.*, XXVI, p. 130, fig. 1.

Hab. Straits of Magellan; southern Chile.

This species is very closely related to *H. macrops*, but, as Ginsburg has pointed out, it has a somewhat more slender body, a smaller head, and the ctenoid scales on the blind side of the body appear to extend further forward. The type is 183 mm. in total length (U.S.N.M. No. 77393), from near the Taitao Peninsula, southern Chile ('Albatross' St. 2787), and, although Ginsburg makes no mention of this fact, this is clearly the specimen examined by Thompson. No examples of this species were obtained by the Discovery Expedition, but re-examination of the 2 specimens (132, 205 mm.) from Trinidad Channel, Magellan Strait, previously identified by me as

H. macrops, suggests that these are referable to Ginsburg's species. It seems probable that *H. mystacium* occurs in the Straits of Magellan and on the southern part of the Chilean coast, whereas *H. macrops* appears to be more northerly in its distribution.

Paralichthys microps (Günther).

? *Hippoglossus kingii*, Jenyns, 1842, *Zool. 'Beagle'*, Fish., p. 138, pl. xxvi.
Hippoglossina microps, Günther, 1881, *Proc. Zool. Soc.*, p. 21; Delfin, 1901, *Cat. Peces Chile*, p. 103.
Pseudorhombus kingii, Reed, 1897, *Cat. Peces Chile*, p. 16.
? *Paralichthys jordani*, Steindachner, 1898, *Zool. Jahrb.*, Suppl. IV, p. 325; Delfin, 1901, *Cat. Peces Chile*, p. 104.
Paralichthys kingii, Delfin, 1901, *t.c.*, p. 104.
Paralichthys microps, Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 88, fig. 52.

St. WS 742. 5. ix. 31. 38° 22′ S, 73° 41′ W. Small beam trawl, 35 m.: 16 specimens, 50–190 mm.

Depth of body 2 to $2\frac{1}{3}$ in the length, length of head $3\frac{1}{6}$ to $3\frac{1}{2}$. Snout about as long as eye (shorter in young), diameter of which is $4\frac{1}{2}$ to $5\frac{1}{2}$ in length of head and much greater than interorbital width. 18 to 23 gill-rakers on lower part of anterior arch. Scales ctenoid on ocular side, cycloid on blind side; 85 to 97 in the lateral line. Dorsal 68–80; origin behind posterior nostril of blind side and above middle or anterior half of eye. Anal 56–65. Pectoral of ocular side with 11 or 12 rays, length about $\frac{1}{2}$ that of head. Caudal peduncle $1\frac{1}{5}$ to $1\frac{1}{2}$ times as deep as long. Brownish or blackish, mottled and spotted with darker; median fins blackish towards their margins; pectoral with small dark spots.

Hab. West coast of Patagonia; Chile.

In addition to the above, there are 6 specimens (107–255 mm.) in the British Museum collection, including the holotype of the species (Coppinger—'Alert'), one from the coast of Chile (Delfin), and 4 from near Concepcion (Cavendish Bentinck).

I have hesitated to adopt the name *kingii* for this species, as Jenyn's species was based upon a coloured sketch of a fish made by Captain King, an officer of the 'Beagle', and no specimen was preserved. The drawing shows the dorsal fin composed of two portions, differing in structure, rather suggestive of a *Psettodes*, and there is no evidence that it is intended to represent a species of *Paralichthys*. *P. adspersus* (Steindachner), from the coasts of Chile and Peru, is very closely related to *P. microps*, differing chiefly in the somewhat deeper body, more anterior origin of the dorsal fin, and the rather lower number of gill-rakers.

Paralichthys patagonicus, Jordan and Goss. "Lenguado."

Platessa orbignyana (*non* Valenciennes), Jenyns, 1842, *Zool. 'Beagle'*, Fish., p. 137.
? *Pseudorhombus dentatus* (*non* Linnaeus), Günther, 1862, *Cat. Fish.*, IV, p. 425.
Paralichthys patagonicus, Jordan and Goss, 1889, *Rep. U.S. Fish. Comm.*, XIV (1886), p. 248; Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 77; Evermann and Kendall, 1906, *Proc. U.S. Nat. Mus.*, XXXI, p. 107; Devincenzi, 1924, *Anal. Mus. Montevideo* (II) I (5), p. 278; Norman, 1934, *Syst. Monogr. Flatfishes*, I, fig. 44; Ginsburg, 1936, *J. Wash. Acad. Sci.*, XXVI, p. 132.
? *Paralichthys bicyclophorus*, Ribeiro, 1915, *Arch. Mus. Nac. Rio Janeiro*, XVII, Heterosomata, p. 14, fig.; MacDonagh, 1934, *Revista Mus. La Plata*, XXXIV, p. 56.

Depth of body about $2\frac{1}{3}$ in the length, length of head $3\frac{2}{3}$ to nearly 4. Diameter of eye 5 to $5\frac{1}{2}$ in length of head, greater than interorbital width. 11 gill-rakers on lower part of anterior arch. Scales ctenoid on ocular side, cycloid on blind side; 103 to 107 in lateral line. Dorsal 76–85; anal 60–69.

Hab. Coasts of southern Brazil, Uruguay and Argentina, southwards to northern Patagonia.

No specimens of this species were obtained by the expedition, but the British Museum has recently received two fine examples (330, 380 mm.) from Buenos Aires, through the courtesy of Messrs A. Gardella Ltd.

In my monograph I erroneously united this species, of which I had seen no specimens, with Ranzani's *P. brasiliensis* [= *P. vorax* (Günther)], but, as Ginsburg has pointed out, it may be readily distinguished by the more numerous scales, which are ctenoid on the ocular side. The same author regards *P. bicyclophorus*, Ribeiro, as probably synonymous with *P. patagonicus*. By softening the dried skin recorded by Jenyns as *Platessa orbignyana* I have been able to count the gill-rakers, and find about 10 of these on the lower part of the anterior arch. This specimen cannot, therefore, belong to the species *P. orbignyana* as defined in my monograph, and should most probably be placed here. The large stuffed specimen from Port Famine, identified by Günther as *P. dentatus* (Linnaeus), appears to have finely ciliated scales on the ocular side of the body, and there are about 100 in the lateral line. It would, therefore, seem to be referable to this species rather than to *P. brasiliensis* (Ranzani), although in certain respects it resembles *P. hilgendorfi*, Steindachner, and *P. schmitti*, Ginsburg.

Paralichthys isosceles, Jordan.

1891, *Proc. U.S. Nat. Mus.*, XIII, p. 330; Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 80. *Pseudorhombus isosceles*, Ginsburg, 1936, *J. Wash. Acad. Sci.*, XXVI, p. 131.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 01′ 51″ W. Commercial otter trawl, 67–65 m.: 2 specimens, 140, 220 mm.

St. WS 763. 16. x. 31. 44° 14′ S, 63° 28′ W. Commercial otter trawl, 87–82 m.: 3 specimens, 215–305 mm.

St. WS 788. 13. xii. 31. 45° 05′ S, 65° 00′ W. Commercial otter trawl, 82–88 m.: 1 specimen, 205 mm.

St. WS 852. 21. iii. 32. 44° 12′ 30″ S, 64° 13′ W. Small beam trawl, 86–88 m.: 2 specimens, 215, 285 mm.

Depth of body 2 to $2\frac{1}{4}$ in the length, length of head $3\frac{2}{5}$ to 4. Upper profile of head generally a little notched in front of upper eye. Snout about as long as eye, diameter of which is $3\frac{3}{5}$ to $4\frac{1}{4}$ in length of head; eyes separated by a narrow ridge. Maxillary extending to below middle or posterior part of eye, length about 2 in head; lower jaw not projecting. No distinct canine teeth. 8 or 9 gill-rakers on lower part of anterior arch. Scales ctenoid on both sides of body; 73 to 79 in lateral line;[1] no supplementary

[1] I am greatly indebted to Mr I. Ginsburg for the information that Jordan was in error in his count of the scales in the types of *P. isosceles*, and that the number should be 74 to 78. Mr Ginsburg has also been kind enough to send me a galley proof of his paper dealing with this and other related Flatfishes, for which courtesy I take this opportunity of offering my sincere thanks.

scales.[1] Dorsal 79–87; origin immediately behind posterior nostril of blind side and in front of eye. Anal 58–69. Pectoral of ocular side with 11 rays, length $1\frac{1}{2}$ to $1\frac{4}{5}$ in that of head. Caudal double-truncate; caudal peduncle more than twice as deep as long. Brownish; generally more or less mottled or spotted with darker; generally an indistinct dark spot above the curve of the lateral line and sometimes another behind the pectoral fin; three large round dark ocelli forming a triangle, a pair above and below the lateral

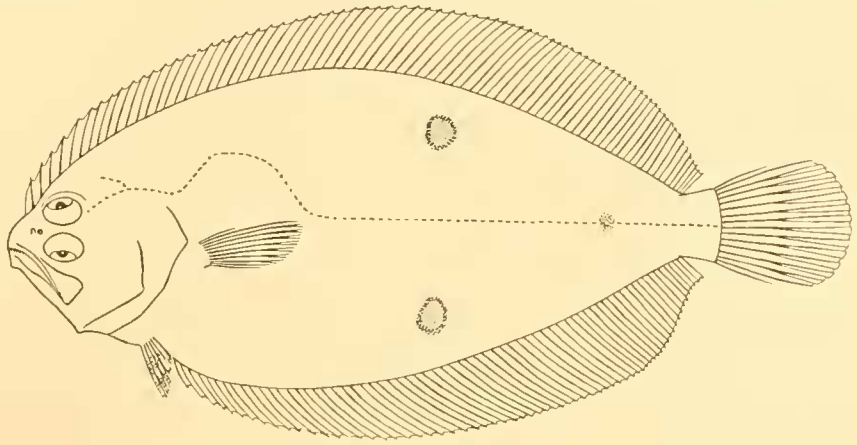

Fig. 75. *Paralichthys isosceles*. $\times\frac{1}{2}$.

line and near edges of body, the third on lateral line just before end of dorsal; fins all more or less speckled or mottled with darker; pelvic of ocular side dusky, with one to three small black spots.

Hab. Northern Patagonia.

The types of this species were 125–280 mm. in total length. It is closely related to *P. triocellatus*, Ribeiro, from which it may be distinguished by the smaller scales, which are ctenoid on both sides of the body, and by the somewhat deeper body.

Xystreurys rasile (Jordan). "Lenguado."

Verecundum rasile, Jordan, 1891, *Proc. U.S. Nat. Mus.*, XIII, p. 330.

Hippoglossina notata, Berg, 1895, *Anal. Mus. Nac. B. Aires*, IV, p. 75.

Xystreurys notatus, Ribeiro, 1904, *Lavoura* [*Bol. Soc. nac. Agricult.*], 4–7 (1903), p. 192; Ribeiro, 1915, *Arch. Mus. Nac. Rio Janeiro*, XVII, Heterosomata, p. 11.

Xystreurys brasiliensis, Regan, 1914, *Ann. Mag. Nat. Hist.* (8) XIII, p. 17; Regan, 1914, *Rep. Brit. Antarct.* ('*Terra Nova*') *Exped.* 1910, Zool., I, p. 23, pl. x, fig. 1.

Xystreurys rasile, Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 121, fig. 77.

St. WS 762. 16. x. 31. 43° 50′ S, 65° 05′ 06″ W. Commercial otter trawl, 67–65 m.: 1 specimen, 260 mm.

St. WS 771. 29. x. 31. 42° 41′ 45″ S, 60° 31′ W. Commercial otter trawl, 90 m.: 2 specimens, 233, 235 mm.

St. WS 852. 21. iii. 32. 44° 12′ 30″ S, 64° 13′ W. Small beam trawl, 86–88 m.: 1 specimen, 200 mm.

Depth of body $2\frac{1}{3}$ to $2\frac{2}{3}$ in the length, length of head 4 to $4\frac{3}{5}$. Snout rather shorter than eye, diameter of which is $2\frac{5}{6}$ (young) to 4 in length of head. Maxillary extending

[1] The absence of supplementary scales leads Mr Ginsburg to place this species in the genus *Pseudorhombus* (as defined by him), but I am not yet convinced of the value of this character in the definition of genera.

to below anterior part or middle of eye. 10 or 11 gill-rakers on lower part of anterior arch. 78 to 86 scales in lateral line. Dorsal 79–84; anal 64–68. Length of pectoral fin of ocular side varying from $\frac{3}{4}$ to a little more than once that of head. Brownish; a large ocellus or spot (sometimes double) at the junction of curved and straight parts of lateral

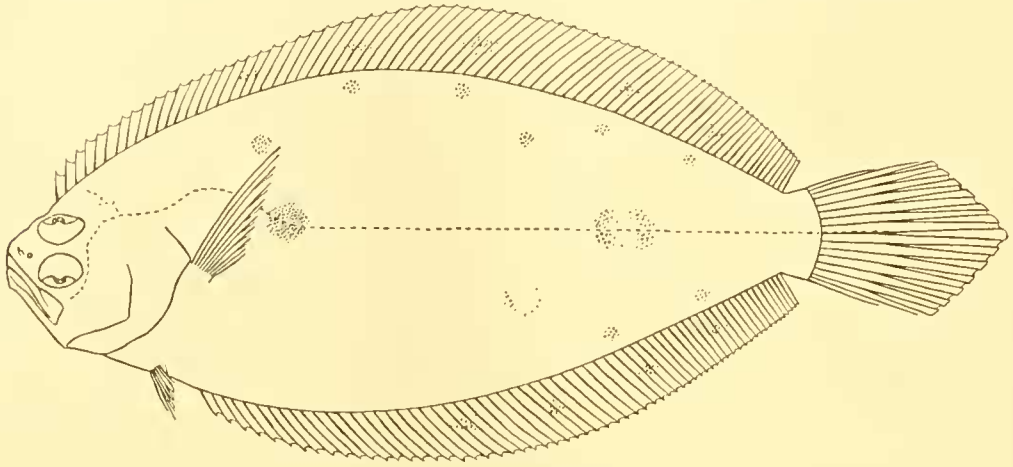

Fig. 76. *Xystreurys rasile.* $\times \frac{1}{2}$.

line and a smaller spot between this and the dorsal fin; a black spot posteriorly on straight portion of lateral line; fins spotted with darker.

Hab. Coasts of southern Brazil, Uruguay and Argentina, southwards to northern Patagonia.

In addition to the above, there are 4 specimens (98–260 mm.) in the British Museum collection, the types of *Xystreurys brasiliensis* and two from off the coast of Uruguay (Marini).

Mancopsetta maculata (Günther).

Lepidopsetta maculata, Günther, 1880, *Shore Fish.* '*Challenger*', p. 18, pl. xxx, fig. C; Norman, 1930, *Discovery Reports*, II, p. 361.

Mancopsetta maculata, Jordan, 1920, *Genera Fish.*, IV, p. 514; Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 248, fig. 189.

St. WS 218. North of the Falkland Islands: 1 specimen, 238 mm.

Hab. Near Prince Edward's Island, southern Indian Ocean; north of the Falkland Islands, southern Atlantic.

The holotype in the British Museum collection is 134 mm. long.

Achiropsetta tricholepis, Norman.

1930, *Discovery Reports*, II, p. 362, fig. 47; Norman, 1934, *Syst. Monogr. Flatfishes*, I, p. 249, fig. 190.

St. WS 89. Off Tierra del Fuego: 1 specimen (holotype), 100 mm.

Hab. Patagonian-Falklands region.

Since the publication of my previous report I have received a second example of this interesting species, collected in the Falkland Islands (? 1922) by Mr Hamilton. This specimen is in very poor condition, and measures about 105 mm. in total length.

GENERAL PART

THE PATAGONIAN REGION

In his report on the fishes of the 'Terra Nova' Expedition, Regan (1914) has discussed the distribution of Antarctic and Sub-Antarctic coast fishes in some detail, and concludes that south of the Tropical Zone the distribution of these fishes is best illustrated by the following classification:

South Temperate Zone, with seven districts: Chile, Argentina, Tristan da Cunha, Cape, St Paul, Australia, and New Zealand.

Sub-Antarctic Zone, with two districts: Magellan and Antipodes.

Antarctic Zone, with two districts: Glacial and Kerguelen.

The Patagonian region, as here understood, includes Tierra del Fuego, the coasts of Patagonia northward as far as Chiloe on the west and as far as the San José or Valdes Peninsula (about latitude 42° S) on the east, the Falkland Islands, and the Burdwood Bank. The northern and southern limits of the region correspond very closely to the mean annual surface isotherms of 12° C. and 6° C., and apart from the fact that its northern boundary on the east coast lies about 300 miles north of Cape Blanco, the Patagonian region represents the Magellan district as delimited by Regan. By taking the boundary as far north as the San José Peninsula all the stations made by the 'William Scoresby' during her trawling surveys are included within the area.

HISTORICAL[1]

Bougainville (1771), in his account of a voyage round the world in the 'Boudeuse' and the 'Étoile', in which he was accompanied by Commerson, appears to have been the first to mention the fishes of the Patagonian region, and has some notes on the "Muge" (*Eleginops*), "Brochet transparent" (*Galaxias*), and "Truite" (*Aplochiton*), from the Falkland Islands (Malouines).

Captain Cook's second expedition with the 'Adventure' and the 'Resolution' between 1772 and 1775, accompanied by J. R. Forster as naturalist (with his son J. G. Forster as assistant), obtained three species of fish from Tierra del Fuego. The specimens were not preserved, but the species were given names by Schneider (1801) on the basis of the MS. notes and the drawings made by J. G. Forster, and the descriptions were also published by Forster (1844). The notes and drawings are in the library of the British Museum (Natural History), but only one of the fishes (*Harpagifer bispinis*) can be identified with certainty. One of the others is a species of *Notothenia*, probably *N. macrocephala*, and the last is either a *Cottoperca* or a *Notothenia* and may well be *Cottoperca gobio*. The earliest fishes described from the Patagonian region are, thus:

Gadus magellanicus, Schneider (? *Notothenia macrocephala*).
Callionymus trigloides, Schneider (? *Cottoperca gobio*).
C. bispinis, Schneider (*Harpagifer bispinis*).

[1] Much of the data for this section has been obtained from the valuable summary of Dollo (1904, pp. 67–78).

During the voyage of the 'Coquille' between 1822 and 1825 a species of fish was obtained from the Falkland Islands and described by Lesson (1830) as *Stomias variegatus*. The exact determination of this species is doubtful, but Cuvier and Valenciennes identify it with *Galaxias maculatus* (Jenyns). Lesson also mentions the so-called "Mullet" of the Falklands (*Eleginops maclovinus*).

During the surveying voyages of the 'Adventure' and 'Beagle' in the years 1826 to 1836, under the command of Captain P. P. King, certain species of fish were obtained at Port Famine and elsewhere. The specimens, which are stuffed skins, were sent to the Zoological Society of London, and were not acquired by the British Museum until 1857. A few years later Günther (1861) described two of them as new species:

Aphritis gobio, Günther (*Cottoperca gobio*).
Chaenichthys esox, Günther (*Champsocephalus esox*).

The historic voyage of the 'Beagle' (1832–1836), under the command of Captain R. Fitzroy, and with Charles Darwin as naturalist, obtained 19 species of fish from the Patagonian region, which were later described by Jenyns (1842):

Myxine australis, Jenyns.
Clupea fuegensis, Jenyns.
Mesites maculatus, Jenyns (*Galaxias maculatus*).
M. alpinus, Jenyns (*Galaxias alpinus*).
M. attenuatus, Jenyns (*Galaxias attenuatus*).
Aplochiton zebra, Jenyns.
A. taeniatus, Jenyns.
Conger punctus, Jenyns (*Ariosoma*(?) *punctus*).
Perca laevis, Jenyns (*Percichthys trucha*).
Paropsis signata, Jenyns (*Parona signata*).
Aphritis undulatus, Jenyns (*Eleginops maclovinus*).
A. porosus, Jenyns (*Eleginops maclovinus*).
Gobius ophicephalus, Jenyns (*Ophiogobius ophicephalus*).
Iluocoetes fimbriatus, Jenyns.
Phucocoetes latitans, Jenyns.
Stromateus maculatus, Cuvier and Valenciennes.
Agriopus hispidus, Jenyns (*Congiopodus peruvianus*).
Aspidophorus chiloensis, Jenyns (*Agonopsis chiloensis*).
Gobiesox marmoratus, Jenyns.

The voyages of the 'Erebus' and 'Terror' to southern seas, under the command of Captain Sir J. C. Ross, during the years 1839 to 1843, led to further additions being made to the list of species known from this region. The fishes collected were described by Richardson (1844–1848) and the following species were added to the Patagonian list:

Syngnathus hymenolomus, Richardson (*Entelurus aequoreus*).
Notothenia cornucola, Richardson.
N. virgata, Richardson (*N. cornucola*).
N. marginata, Richardson (*N. cornucola*).
N. tessellata, Richardson.
N. sima, Richardson.
Harpagifer palliolatus, Richardson (*H. bispinis*).
Atherina nigricans, Richardson (*Austromenidia nigricans*).

H.M.S. 'Nassau' (1866–1869), under the command of Captain R. C. Mayne, and with R. O. Cunningham as naturalist, obtained a number of fishes from this region, which were later described by Cunningham (1871). The following additional species were obtained:

Acanthias vulgaris, Risso (? *A. lebruni*).
Psammobatis rudis, Günther (*P. scobina*).
Callorhynchus antarcticus, Lacepède (*C. callorhynchus*).
Merluccius gayi, Guichenot (*M. hubbsi*).
Notothenia macrocephala, Günther.
Tripterygium sp. (*T. cunninghami*).
Maynea patagonica, Cunningham.
Atherinichthys laticlavia, Cuvier and Valenciennes (*Austromenidia smitti*).
A. alburnus, Günther (*Austromenidia nigricans*).
Sebastes oculatus, Cuvier and Valenciennes (*Sebastodes oculatus*).

In 1871 to 1872, the 'Hassler', under the scientific direction of Louis Agassiz, and with F. Steindachner as ichthyologist, obtained some fishes from the Magellan district, which were later described by Steindachner (1876). The following names were added to the list in this paper:

Cottoperca rosenbergii, Steindachner (*C. gobio*).
Notothenia longipes, Steindachner.
N. hassleriana, Steindachner (*N. macrocephala*).

During the voyage of the 'Challenger' (1872–1876), under the command of Sir G. S. Nares, several stations were made in the Patagonian region. The fishes were described by Günther (1880, 1887, 1889), and the following species added to the Patagonian fauna:[1]

Scyllium chilense, Guichenot (*Scyliorhinus bivius*).
S. canescens, Günther (*Scyliorhinus canescens*).
Centroscyllium granulatum, Günther.
Spinax granulosus, Günther.
Raja brachyura, Günther (*R. brachyurops*).
Macrurus fasciatus, Günther (*Coelorhynchus fasciatus*).
Macruronus novae-zealandiae, Hector (*M. magellanicus*).
Salilota australis (Günther).
Lotella marginata, Günther.
Notothenia elegans, Günther.
Lycodes macrops, Günther (*Ophthalmolycus macrops*).
Cataetyx messieri (Günther).
Thysanopsetta naresi, Günther.

The S.M.S. 'Gazelle' (1874–1876), under the command of Captain F. von Schleinitz, visited the Straits of Magellan and the east coast of Patagonia. The zoological results of the voyage were edited by Studer (1889), and the following species added:

Notothenia squamiceps, Peters.

[1] Some of the new species of fishes obtained by the 'Challenger' were described by Günther in a preliminary paper: 1878, *Ann. Mag. Nat. Hist.* (5) II, pp. 17–28, 179–187, 248–251.

During the years 1878–1880, the 'Alert', with Dr R. W. Coppinger as naturalist, obtained a number of fishes from the Patagonian region, which were described by Günther (1881). The following species were new to the region:

Galaxias coppingeri, Günther (*G. maculatus*).
Trachurus trachurus (Linnaeus).
Melanostigma gelatinosum, Günther.
Agriopus peruvianus, Cuvier and Valenciennes (*Congiopodus peruvianus*).
Neophrynichthys latus, Hutton (*N. marmoratus*).
Hippoglossina macrops, Steindachner (*H. mystacium*).
H. microps, Günther (*Paralichthys microps*).

The Italian Antarctic Expedition (1881–1882), under the command of Lieutenant G. Bove, and with Dr D. Vinciguerra as naturalist, made a collection of fishes in this region, which were later described with others from South America by Perugia (1891). Four species were added to the Patagonian list:

Clupea arcuata, Jenyns.
Salilota bovei, Perugia (? *S. australis*).
Percichthys vinciguerrae, Perugia.
Genypterus blacodes (Schneider).

The important Mission Scientifique du Cap Horn (1882–1883), with the 'Romanche' and the 'Volage' under the command of Captain Martial, made extensive collections in the Magellan district, which were reported upon by Vaillant (1888). The following species were added to the fauna:

Acanthias lebruni, Vaillant (*Squalus lebruni*).
Leptonotus blainvilleanus (Eydoux and Gervais).
Muraenolepis orangiensis, Vaillant.
Notothenia squamifrons, Günther (? *N. wiltoni*).
N. cyanobrancha, Richardson (? *N. brevicauda*).
Thyrsites atun (Euphrasen).
Lycodes variegatus, Günther (*Iluocoetes fimbriatus*).
Genypterus chilensis (Guichenot) (? *G. blacodes*).
Seriolella porosa, Guichenot.
Enantioliparis pallidus, Vaillant (*Careproctus pallidus*).
Cyclopterichthys amissus, Vaillant.

During the years 1887 to 1888, the United States Bureau of Fisheries steamer 'Albatross' passed by way of the Straits of Magellan from the Atlantic to the Pacific, collecting at various points en route. A number of fishes were obtained from the Patagonian region, but were untouched until reported upon by Thompson (1916). Two species were added to the list:

Squalus fernandinus, Molina (? *S. lebruni*).
Coelorhynchus patagoniae, Gilbert and Thompson.

Jordan (1891) described four species of fish from Patagonia, collected about 1888. Two of these were taken near Cape San Matios, one probably at southern Patagonia, and the last probably on the west coast of Patagonia. One only was new to this region:

Psammobatis rutrum, Jordan (*P. scobina*).

Professor M. L. Plate of the University of Berlin made important collections in Chile, Patagonia and Tierra del Fuego during the years 1893 to 1895, which were studied by Steindachner (1898, 1903).[1] The following species were added to the Patagonian fauna:

Raja magellanica, Steindachner.
Galaxias platei, Steindachner.
Notothenia modesta, Steindachner (*N. cornucola*).
Notothenia acuta, Günther (*N. canina*).
Clinus geniguttatus, Cuvier and Valenciennes (*Calliclinus geniguttatus*).
Lycodes (*Phucocoetes*) *platei*, Steindachner (*Austrolycus laticinctus*).
Platea insignis, Steindachner.

The scientific expedition to Tierra del Fuego (1895 to 1897), with the Chilean vessels 'Condor' and 'Huemul', under the direction of Dr O. Nordenskiöld, obtained a number of fishes from this region, which were described by Smitt (1897, 1899). The following were new to the region:

Notothenia tessellata forma *canina*, Smitt (*N. canina*).
Dissostichus eleginoides, Smitt.
Tripterygium cunninghami, Smitt.
Phucocoetes variegatus elongatus, Smitt (*Iluocoetes elongatus*).
Atherinichthys regia (Humboldt) (*Austromenidia smitti*).

The Belgian Antarctic Expedition, with the S.Y. 'Belgica' under the command of A. de Gerlache de Gomery, during the years 1897 to 1899, obtained a few fishes from the Patagonian region, which were reported upon by Dollo (1904). He records one species not previously reported from the region:

Notothenia coriiceps, Richardson (*N. cornucola*).

In 1899 and 1900 Mr Barnum Brown made a small collection of fishes in Patagonia and Tierra del Fuego for the American Museum of Natural History, which were dealt with by Hussakof (1914). There were no new Patagonian species in this collection.

In 1900, the late Mr Rupert Vallentin sent a few fishes from the Falkland Islands to the British Museum, which were studied by Boulenger (1900). One new species was described:

Lycodes flavus, Boulenger (*Phucocoetes latitans*).

The Swedish South Polar Expedition, with the 'Antarctic', under the direction of Dr O. Nordenskiöld, during the years 1901 to 1903, obtained a number of fishes from Tierra del Fuego and adjacent seas, and from the Falkland Islands and the Burdwood Bank. These were reported upon by Lönnberg (1905), and the following species added to the list:

Muraenolepis marmoratus microps, Lönnberg (*M. microps*).
Macrurus sp. (conf. *holotrachys*, Günther) (*Coelorhynchus holotrachys*).
Notothenia brevicauda, Lönnberg.
N. karlandriae, Lönnberg (*N. sima*).

[1] The zoological results of Professor Plate's expedition were published in four supplementary volumes of the *Zoologische Jahrbücher*, under the general title of "Fauna Chilensis".

N. brevipes, Lönnberg (*N. tessellata*).
Iluocoetes fimbriatus fasciatus, Lönnberg (*Crossostomus fasciatus*).
Liparis antarctica falklandica, Lönnberg (*Careproctus falklandica*).

Lönnberg (1907) has also published an account of a collection of fishes from the Magellan district in the Naturhistorisches Museum at Hamburg, including specimens obtained by Captain R. Paessler (1886–1904) and those obtained by Dr W. Michaelsen with the 'Sara' (1892, 1893). The following species were new to the Patagonian region:

Mustelus canis (Mitchill).
Etmopterus paessleri, Lönnberg (*Spinax paessleri*).
Raja oxyptera, Philippi (*R. flavirostris*).
Macruronus magellanicus, Lönnberg.
Serranus humeralis, Cuvier and Valenciennes (*Paralabrax humeralis*).
Cheilodactylus macropterus (Schneider) (? *C. bergi*).
Pinguipes chilensis (Molina).
Sebastodes darwini (Cramer) (? *S. oculatus*).
Porichthys porosus (Cuvier and Valenciennes).

The Scottish National Antarctic Expedition (1902 to 1904), with the 'Scotia', under the direction of Mr W. S. Bruce, obtained some fishes from the Falkland Islands and the Burdwood Bank, which were reported upon by Regan (1913). The following species were added to the Patagonian list:

Cottoperca macrophthalma, Regan (*C. gobio*).
Notothenia trigramma, Regan.
N. ramsayi, Regan.
N. wiltoni, Regan.
Austrolycus depressiceps, Regan.

The second French Antarctic Expedition (1908 to 1910), with the 'Pourquoi Pas?', under the command of Dr Jean Charcot, collected a few fishes from the Magellan district, which were reported upon by Roule, Angel and Despax (1913). Only one new species was obtained:

Cottoperca macrocephala, Roule (? *C. gobio*).

Following this expedition there have been no further collections of importance made in the Patagonian region until the trawling surveys were undertaken by the Discovery Committee. There are several papers by Lahille, MacDonagh, Marini, and others, on the marine fishes of Argentina, and a few of the specimens described by these authors seem to have been collected in the northern part of the region here defined.

LIST OF PATAGONIAN FISHES

The following list includes all the records from the Patagonian region as here delimited as far as it has been possible to trace them. Those species marked with an asterisk were not obtained by the Discovery Committee. The parallel columns on the right of each name indicate the distribution of the species, not only within the region, but in other parts of South America. *A* represents the coast of Chile north of Chiloe (i.e. outside the region); *B* covers the west coast of Patagonia south of Chiloe, the Straits of Magellan, and Tierra del Fuego; *C* covers the east coast of Patagonia as far north as Cape Blanco (i.e. to the limit of the Magellan district as defined by Regan),

	A	B	C	D	E	F
Geotria australis, Gray	×	×	×	×	×	Australia; N. Zealand
Myxine australis, Jenyns	.	×	×	×	.	
Myxine affinis, Günther	.	×	×	.	.	
**Myxine tridentiger*, Garman	.	×	.	.	.	
Cetorhinus maximus (Gunner)	.	.	×	.	×	N. and S. Hemispheres
**Scyliorhinus* (*Halaelurus*) *canescens* (Günther)	.	×	.	.	.	
Scyliorhinus (*Halaelurus*) *bivius* (Smith)	.	×	×	×	×	
**Mustelus canis* (Mitchill)	.	×	.	×	×	Both sides of Atlantic
**Centroscyllium granulatum*, Günther[1]	.	.	×	.	.	
**Spinax paessleri* (Lönnberg)	.	×	.	.	.	
**Spinax granulosus*, Günther	.	×	.	.	.	Hawaii; S. Africa
Squalus lebruni (Vaillant)	×	×	×	.	×	Australia; N. Zealand
**Centroscymnis macracanthus*, Regan	.	×	.	.	.	
Discopyge tschudii, Heckel	×	.	.	×	×	
Raja flavirostris, Philippi	×	×	×	×	×	
Raja doello-juradoi, Pozzi	.	.	×	×	×	
Raja macloviana, sp.n.	.	.	×	×	.	
Raja magellanica, Steindachner	.	×	×	.	.	
Raja multispinis, sp.n.	.	.	×	.	.	
Raja scaphiops, sp.n.	.	.	×	×	.	
Raja albomaculata, sp.n.	.	.	×	.	.	
Raja brachyurops, Fowler	.	×	×	×	×?	
Raja griseocauda, sp.n.	.	.	×	×	.	
Psammobatis extenta (Garman)	.	.	.	×	×	S. Brazil
Psammobatis scobina (Philippi)	×	×	×	×	×	
Callorhynchus callorhynchus (Linnaeus)	×	×	×	×	×	S. Brazil
Clupea fuegensis, Jenyns	.	×	×	×	.	
Clupea arcuata, Jenyns	.	×	×	×	×	
Galaxias attenuatus (Jenyns)	×	×	×	.	.	Australia; N. Zealand
**Galaxias maculatus* (Jenyns)	×	×	×	.	.	
**Galaxias alpinus* (Jenyns)	.	×	.	.	.	
**Galaxias platei*, Steindachner	.	×	.	.	.	
**Galaxias smithii*, Regan	.	.	×	.	.	
Aplochiton zebra, Jenyns	.	×	×	.	.	
**Aplochiton taeniatus*, Jenyns	.	×	×	.	.	
**Ariosoma* (?) *punctus* (Jenyns)	.	×	.	.	.	
Leptonotus blainvilleanus (Eydoux & Gervais)	×	×	.	×?	.	
**Entelurus aequoreus* (Linnaeus)	.	.	×	.	.	N. and S. Atlantic; Mediterranean; North Sea, etc.
Coryphaenoides holotrachys (Günther)	.	×?	×	×	×	
Coelorhynchus fasciatus (Günther)	.	×	×	.	.	S. Africa
**Coelorhynchus patagoniae*, Gilbert & Thompson	.	×	.	.	.	
Merluccius hubbsi, Marini	.	×	×	×	×	
**Merluccius australis* (Hutton)	.	×	.	.	.	N. Zealand
Macruronus magellanicus, Lönnberg	.	×	×	×	×	
Micromesistius australis, sp.n.	.	.	×	×	.	
Salilota australis (Günther)	.	×	×	×	.	
Physiculus marginatus (Günther)	.	×	×	.	.	
Muraenolepis microps, Lönnberg	.	.	×	.	.	S. Georgia; Antarctic
Muraenolepis orangiensis, Vaillant	.	×	×	.	.	
Lampris regius (Bonnaterre)	.	.	×	.	.	Atlantic; Pacific
**Percichthys trucha* (Cuvier & Valenciennes)	×	×	.	.	.	
**Percichthys vinciguerrae*, Perugia	.	×	.	.	.	

[1] Perhaps identical with *C. fabricii* (Reinhardt), from the North Atlantic and North Pacific.

	A	*B*	*C*	*D*	*E*	*F*
**Alphestes afer* (Bloch)	.	.	×	.	.	W. Indies; Brazil
**Paralabrax humeralis* (Cuvier & Valenciennes)	×	×	.	.	.	
**Trachurus trachurus* (Linnaeus)	×?	×	.	.	×	Atlantic; Pacific(?)
Parona signata (Jenyns)	.	.	×	×	×	S. Brazil
**Cilus montti*, Delfin[1]	×	×	.	.	.	
Cheilodactylus bergi, sp.n.	.	.	×?	×	×	Brazil
**Latris hecateia*, Richardson[2]	.	×	.	.	.	Australia; N. Zealand
**Pinguipes chilensis* (Molina)	×	×	.	.	.	
Cottoperca gobio (Günther)	.	×	×	×	×	
**Bovichtus argentinus*, MacDonagh	.	.	.	×	×	
Notothenia macrophthalma, sp.n.	.	.	×	.	.	
**Notothenia trigramma*, Regan	.	.	×	.	.	
Notothenia canina, Smitt	.	×	×	.	.	
Notothenia jordani, Thompson	.	×	×	.	.	
Notothenia tessellata, Richardson	.	×	×	.	.	
Notothenia brevicauda, Lönnberg	.	×	×	.	.	
Notothenia guntheri, sp.n.	.	.	×	.	.	
Notothenia ramsayi, Regan	.	.	×	×	.	
Notothenia wiltoni, Regan	.	×	×	×	×	
Notothenia longipes, Steindachner	.	×	.	.	.	
Notothenia squamiceps, Peters	.	×	×	.	.	
Notothenia sima, Richardson	.	×	×	.	.	
Notothenia cornucola, Richardson	.	×	×	.	.	
Notothenia elegans, Günther	.	×	×	×	.	
Notothenia macrocephala, Günther	×	×	×	.	.	Kerguelen; N. Zealand, etc.
**Notothenia microlepidota*, Hutton	.	×	.	×	.	N. Zealand, etc.
Dissostichus eleginoides, Smitt	.	×	×	.	×	Graham Land
Eleginops maclovinus (Cuvier & Valenciennes)	×	×	×	×	×	
Harpagifer bispinis (Schneider)	.	×	×	.	.	S. Georgia; Antarctic; Kerguelen; Marion Is., Macquarie I., etc.
Champsocephalus esox (Günther)	.	×	×	.	.	
Thyrsites atun (Euphrasen)	×	×	×	×	×	S. Africa; Tristan da Cunha; Australia; N. Zealand
Gasterochisma melampus, Richardson	.	.	×	.	×	S. Atlantic; S. Pacific
**Ophiogobius ophiocephalus* (Jenyns)	×	×	.	.	.	
**Heterogobius*(?) *chiloensis* (Guichenot)	.	×	.	.	.	
**Calliclinus geniguttatus* (Cuvier & Valenciennes)	×	×	.	.	.	
**Tripterygium cunninghami*, Smitt	.	×	.	.	.	
**Ophthalmolycus macrops* (Günther)	.	×	.	.	.	
Ilnocoetes fimbriatus (Jenyns)	.	×	×	×	×	
Ilnocoetes elongatus (Smitt)	.	.	×	×	.	
Austrolycus depressiceps, Regan	.	×	×	.	.	
Austrolycus laticinctus (Berg)	.	×	×	.	×?	
Phucocoetes latitans, Jenyns	.	.	×	.	.	
**Crossostomus chilensis* (Regan)	.	×	.	.	.	
**Crossostomus fasciatus* (Lönnberg)	.	.	×	.	.	
Pogonolycus elegans, sp.n.	.	.	×	.	.	
Platea insignis, Steindachner	.	×	×	.	×	
**Maynea patagonica*, Cunningham	.	×	×	.	.	
Maynea brevis, sp.n.	.	.	×	×	.	

[1] Delfin, 1901, *Cat. Peces Chile*, p. 67.

[2] Delfin, 1901, *t.c.*, p. 73

	A	*B*	*C*	*D*	*E*	*F*
**Melanostigma gelatinosum*, Günther	.	×	.	.	.	
Melanostigma microphthalmus, sp.n.	.	.	×	.	.	
Lycodapus australis, sp.n.	.	×	.	.	.	
Genypterus blacodes (Schneider)	.	×	×	×	×	Australia; N. Zealand
Cataetyx messieri (Günther)	.	×	×	×	.	S. Africa
Seriolella porosa, Guichenot	×	×	×	×	.	Australia; N. Zealand
Palinurichthys caeruleus (Guichenot)	.	.	×	.	.	Juan Fernandez
Palinurichthys griseolineatus, sp.n.	.	.	×	.	.	
Stromateus maculatus, Cuvier & Valenciennes	×	×	×	×	×	
Austromenidia smitti (Lahille)	.	×	×	×	×	
Austromenidia nigricans (Richardson)	.	×	×	.	.	
Sebastodes oculatus (Cuvier & Valenciennes)	×	×	×	.	.	
Congiopodus peruvianus (Cuvier & Valenciennes)	×	×	×	×	×	
**Bunocottus apus*,[1] Kner	.	.	×	.	.	
Neophrynichthys marmoratus, Gill	.	×	×	.	×	
Agonopsis chiloensis (Jenyns)	×	×	×	×	×	
**Cyclopterichthys amissus*, Vaillant	.	×	.	.	.	
Careproctus falklandica, Lönnberg	.	×	×	.	.	
**Careproctus pallidus* (Vaillant)	.	×	.	.	.	
**Liparis antarctica*, Putnam	.	.	×	.	.	
Thysanopsetta naresi, Günther	×	×	×	×	.	
**Hippoglossina mystacium*, Ginsburg	.	×	.	.	.	
Paralichthys microps (Günther)	×	×	.	.	.	
Paralichthys isosceles, Jordan	.	.	.	×	×	
Xystreurys rasile (Jordan)	.	.	.	×	×	S. Brazil
Mancopsetta maculata (Günther)	.	.	×	.	.	Nr. Prince Edward's I., Indian Ocean
Achiropsetta tricholepis, Norman	.	.	×	.	.	
**Gobiesox marmoratus*, Jenyns	×	×	.	.	.	
**Porichthys porosus* (Cuvier & Valenciennes)	×	×	.	.	.	

[1] The presence of a member of the family Cottidae in this region is curious. Kner's species is known only from the unique holotype (about 65 mm.), said to be from the Burdwood Bank. According to Kner the pelvic fins are entirely wanting, but his figure shows a well-developed pelvic fin (1868, *SitzBer. Akad. Wiss. Wien*, LVIII (1), p. 316, pl. iii, fig. 9).

the Falkland Islands and the Burdwood Bank; *D* covers the remainder of the east coast from Cape Blanco to the San José Peninsula; *E* covers the coasts of Argentina and Uruguay; and *F* covers the distribution outside South America.

After this report had been sent to press, my attention was drawn to the following paper dealing with the marine fishes of Argentina: Pozzi, A. J. and Bordale, L. F., "Cuadro sistemático de los peces marinos de la Republica Argentina", *Anal. Soc. cient. Argent.*, CXX (4), 1935, pp. 145–89, 1 map. The authors provide a complete list of the species found on the whole of the Argentine coast, and give the latitudinal range of each species (e.g. 35°–56° S.). I have gone through this list carefully, and find that the following species, not included in my own list of the Patagonian fishes, have been recorded from south of latitude 42° S.:

Squalus acanthias (Linnaeus), 39°–52° 30′ S.
Echinorhinus spinosus (Gmelin), 35°–56° S.

Tachysurus barbus (Lacepède), 35°–52° S.
Syngnathus acicularis, Jenyns, 35°–52° S.
Hippocampus punctulatus, Guichenot, 35°–43° 30′ S.
Pinguipes fasciatus, Jenyns, 35°–43° S.
Paralichthys brasiliensis (Ranzani), 35°–44° S.
Paralichthys patagonicus (Jordan and Goss), 37°–44° S.
Oncopterus darwini, Steindachner, 35°–44° S.

NOTES ON THE FISH FAUNA

The number of species recorded from the Patagonian region as here delimited is 128, and of these 85 (about 65 per cent) were obtained by the Discovery Committee's ships. A study of the list given above shows that, of the 128 species, 67 (52 per cent) are apparently confined to the region, although it must be admitted that careful collecting on the little-known coastal region of Argentina between the mouth of the Rio Plata and the San José Peninsula would probably greatly increase the list of species which extend northwards on this coast. A further 39 species are known to extend outside the region along the coasts of Chile or Argentina, but do not occur elsewhere, so that no less than 106 species (about 83 per cent) are inhabitants of the temperate and sub-Antarctic coasts of South America. Of the remaining 22 species, 7 occur also in Australia and New Zealand, 2 in New Zealand only, and 4 in South Africa. Only 3 species (*Muraenolepis microps*, *Dissostichus eleginoides*, *Harpagifer bispinis*) are found also in South Georgia or in Graham Land.

Leaving out of account the more widely distributed and often semi-oceanic fishes such as *Cetorhinus*, *Trachurus*, *Gasterochisma*, and the deep-water Sharks of the family Squalidae, the fish fauna of the Patagonian region may be roughly grouped into three categories. These are:

(1) Argentine or Chilean forms.

(2) More or less cosmopolitan genera with representatives in both the Northern and Southern Hemispheres.

(3) Forms that are peculiar to the sub-Antarctic and Antarctic Zones (e.g. Nototheniidae, Zoarcidae).

Characteristic genera in the second category are: *Myxine*, *Squalus*, *Raja*, *Clupea*, *Merluccius* and *Micromesistius*. It is of interest to note that some of the species of these genera can be paired off, as it were, with related species in the Northern Hemisphere, sometimes well separated, sometimes so closely related that it is a matter of difficulty to separate the two forms. Such pairs are: *Myxine australis* and *M. glutinosa*, *Squalus lebruni* and *S. acanthias*, *Raja flavirostris* and *R. batis*, *Raja doello-juradoi* and *R. radiata*, *Clupea fuegensis* and *C. harengus*, *Clupea arcuata* and *C. sprattus*, *Merluccius hubbsi* and *M. merluccius*, *Micromesistius australis* and *M. poutassou*. The close relationship of some of these pairs of species suggests the possibility of some fairly recent interchange between the faunas of the North Temperate and South Temperate Zones, and, as Regan[1] has pointed out when discussing the geographical distribution of the genus

[1] 1916, *Ann. Mag. Nat. Hist.* (8) XVIII, p. 15.

Sardina, there is good evidence that the limits of these zones have fluctuated considerably in comparatively recent times. He points out that fishes which descend to considerable depths are less likely than shallow-water species to find the Tropical Zone an impassable barrier, and, in this connection, it may be noted that almost all the fishes listed in pairs above are known to occur (at least at times) in comparatively deep water.

With regard to the fishes of the last category, the families of special importance are the following: Muraenolepidae, Bovichthyidae, Nototheniidae, Chaenichthyidae and Zoarcidae. Regan[1] has already dealt with these in his discussion of the Magellan district, and his conclusions, with very slight modifications, have been confirmed by my own work.

Muraenolepidae. *Muraenolepis orangiensis* is confined to the Patagonian region. *M. microps* occurs on the Burdwood Bank, south of the Falkland Islands and also at South Georgia, the South Sandwich Islands, and off new land south of the Balleny Islands. A third species, *M. marmoratus*, is found at Kerguelen.

Bovichthyidae. The genus *Cottoperca* is characteristic of this region, but the single species extends northwards on the coast of Argentina. A species of *Bovichthys* (*B. argentinus*) has recently been described from the Golfo Nuevo (just south of the San José Peninsula) and from the Golfo San Jorge (about latitude 46° S).

Nototheniidae. The characteristic Antarctic genera *Trematomus* and *Pleuragramma*, and the Harpagiferinae, except *Harpagifer bispinis*, are absent. *Eleginops maclovinus* ranges northwards to Valparaiso on the west coast and to Buenos Aires on the east. *Dissostichus eleginoides* ranges northwards on the coast of Argentina to the Rio Plata and southwards to Graham Land. What has been described by Regan as the *tessellata* group of *Notothenia*, a natural group of eleven species, comprising all those with the upper surface and sides of the head, except the snout and the praeorbital, scaled, and with a rather broad interorbital region, is peculiar to this area. Two species of another type, with the opercles scaled on the upper part of the operculum only, and with the upper surface of the head naked (*N. cornucola*, *N. elegans*), are not found elsewhere, and two other species of the same group but with a reduced number of anal rays (*N. macrocephala*, *N. microlepidota*) occur also in the Antipodes district. Finally, there is one species (*N. macrophthalma*) from near the Burdwood Bank, which has not been recorded elsewhere but which is very closely related to *N. squamifrons* from Kerguelen.

Chaenichthyidae. Represented in this region by *Champsocephalus esox*. This species does not occur elsewhere, but the genus contains one other species from South Georgia.

Zoarcidae. *Iluocoetes* and *Austrolycus* each have one species peculiar to the region and another which appears to extend northwards along the coast of Argentina. *Phucocoetes* (1 species), *Crossostomus* (2 species) and *Pogonolycus* (1 species) are peculiar; the single species of *Platea* extends northwards on the Argentine coast. *Ophthalmolycus* has one species here and one in the Antarctic, and *Maynea* has two here and one in the Antarctic.

[1] 1914, *Rep. Brit. Antarct.* ('*Terra Nova*') *Exped.* 1910, Zool. 1, p. 37.

Regan[1] has made the following remarks with regard to the Kerguelen District. "At the first glance it may seem that as so many characteristic Antarctic genera appear to be absent and most of the Nototheniidae belong to *Notothenia*, which is well represented in the sub-Antarctic Zone, the Kerguelen District might be included in the latter. But a more critical examination shows that the *tessellata* group, characteristic of Magellan, is absent, that the *squamifrons*, *acuta* and *marionensis* groups are present and are found elsewhere only in the Glacial District, and that the *coriiceps* group is represented by *N. coriiceps*, an Antarctic species, and by the related *N. cyaneobrancha*. The only way to mark the dissimilarity of the fish-fauna of Kerguelen from that of Magellan or of the sub-Antarctic islands of New Zealand and to express its affinity to that of Antarctica is to include it in the Antarctic Zone as a separate district, small and impoverished, but with well-marked characters."

A closer study of the fish-fauna of the Patagonian region has shown that the dissimilarity between this and that of Kerguelen is not so marked, and that the latter has several features in common with the Patagonian region as well as with Antarctica. Two species of *Raja* occur at Kerguelen: one (*R. murrayi*) is related to the Patagonian *R. macloviana*, and the other (*R. eatonii*) is related to the Patagonian *R. scaphiops*. *Muraenolepis marmoratus* is related to *M. microps* and *M. orangiensis*, both of which occur in the Magellan District. The 'William Scoresby' obtained a single specimen of a new species of *Notothenia* from deep water near the Burdwood Bank, which is very closely related to *N. squamifrons* from Kerguelen. *Notothenia macrocephala* has now been recorded from Kerguelen,[2] and this species occurs also in the Patagonian region and in the Antipodes District but not in the Glacial District. *Harpagifer bispinis* is also common to Kerguelen and the Patagonian region, but occurs in the Antarctic Zone.

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[1] 1914, *t.c.*, p. 36.

[2] Regan, 1916, *Ann. Mag. Nat. Hist.* (8) XVIII, p. 378. See also, Waite, 1916, *Austral. Antarct. Exped.*, Fishes (*Sci. Rep.* Ser. C, III, 1), p. 69.

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PLATE I

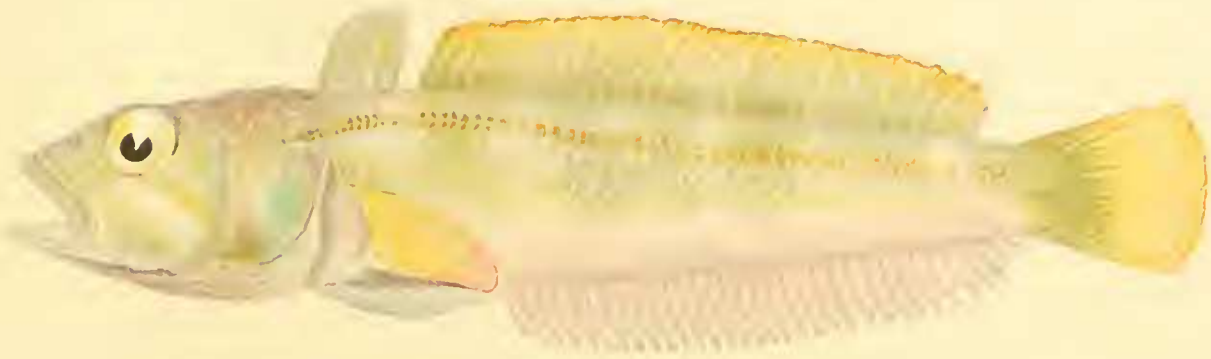
Sketches of Patagonian fishes made from life by Mr E. R. Gunther.

Fig. 1. *Notothenia guntheri* (× $\frac{7}{8}$).

Fig. 2. *Notothenia ramsayi* (× $\frac{7}{8}$).

Fig. 3. *Pogonolycus elegans* (× 2).

Fig. 4. *Iluocoetes fimbriatus* (× $\frac{1}{2}$).



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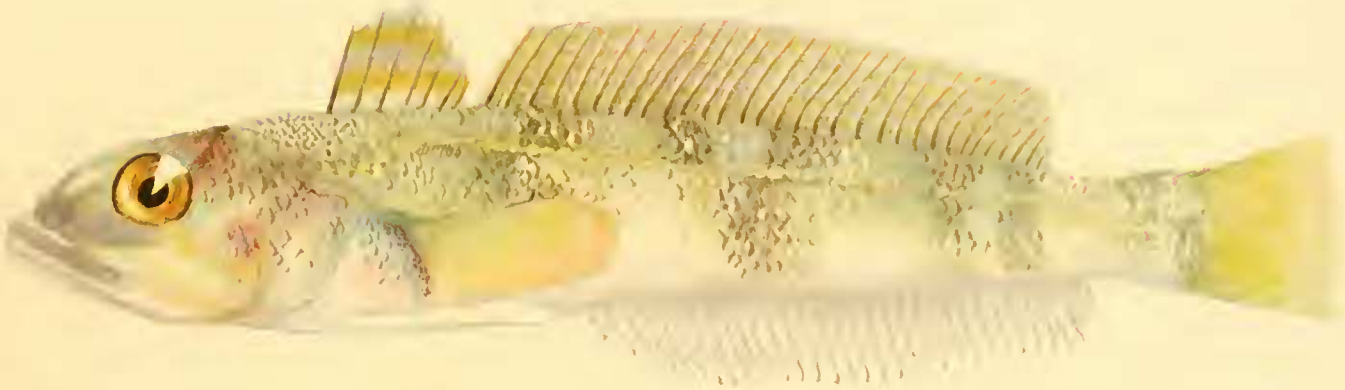

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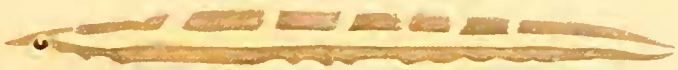

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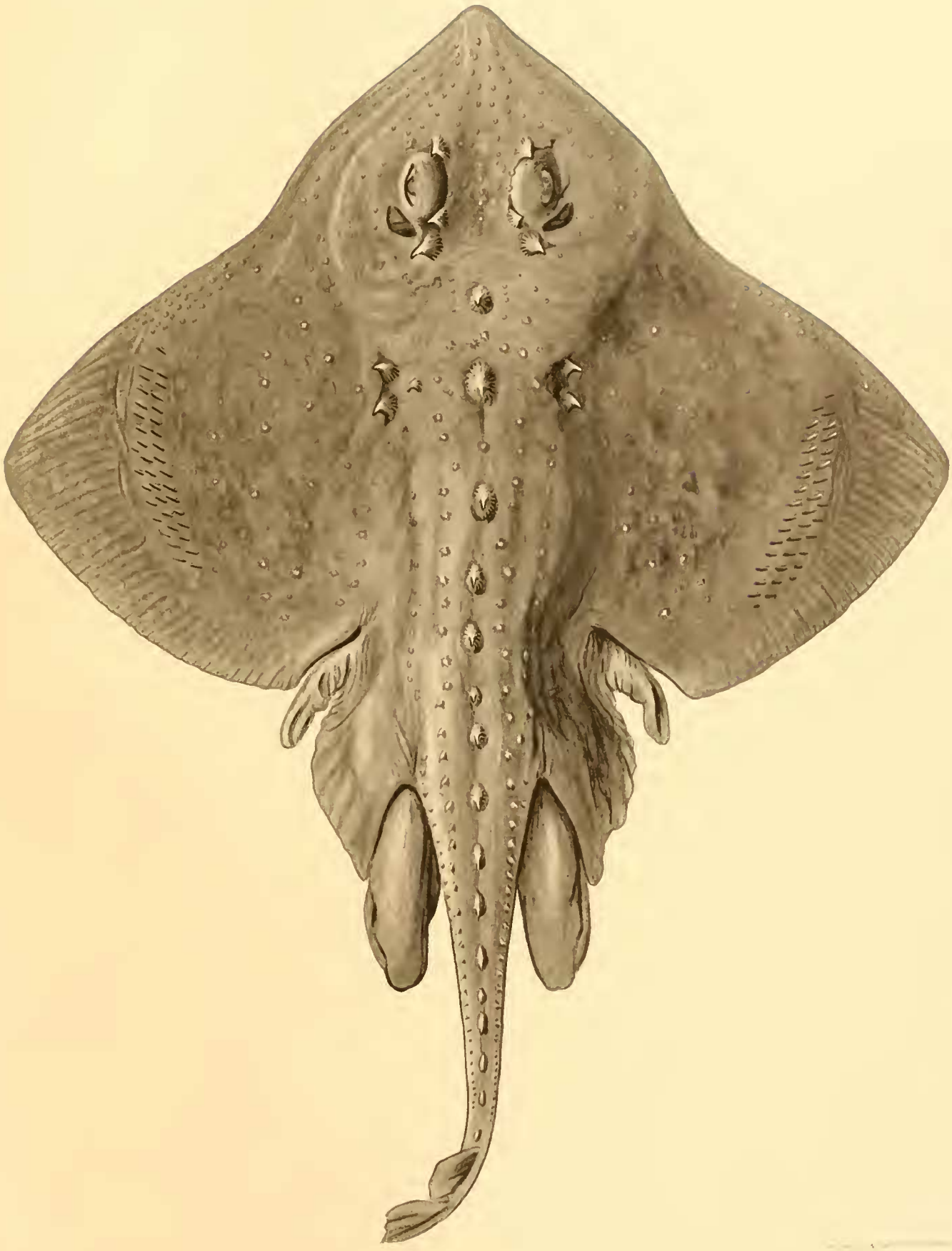
COAST FISHES

PLATE II

Raja doello-juradoi. Male (× about $\frac{1}{2}$).



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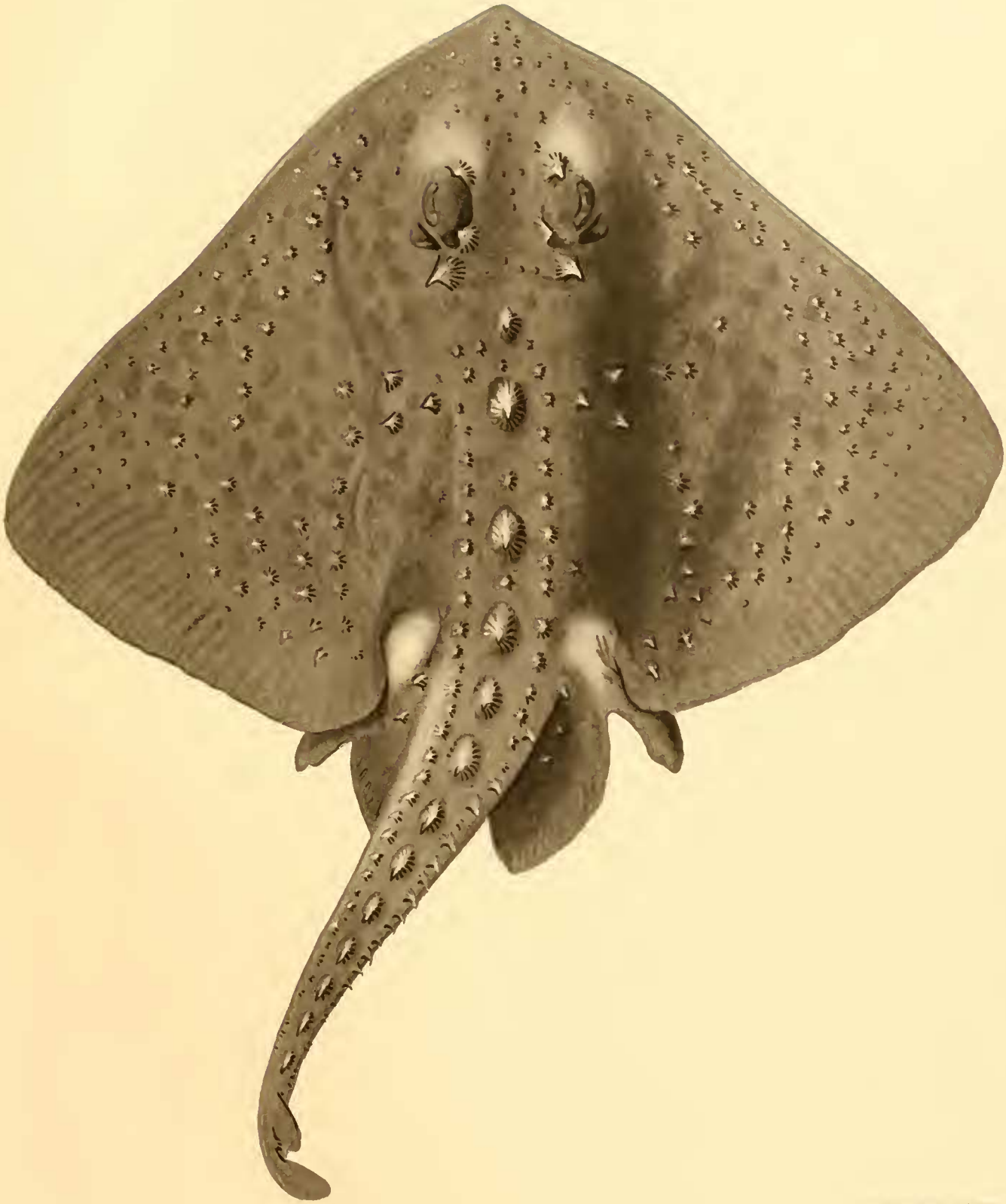
COAST FISHES

PLATE III

Raja doello-juradoi. Female (× about $\frac{4}{5}$).



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COAST FISHES

PLATE IV

Raja magellanica (× about $\frac{1}{3}$).

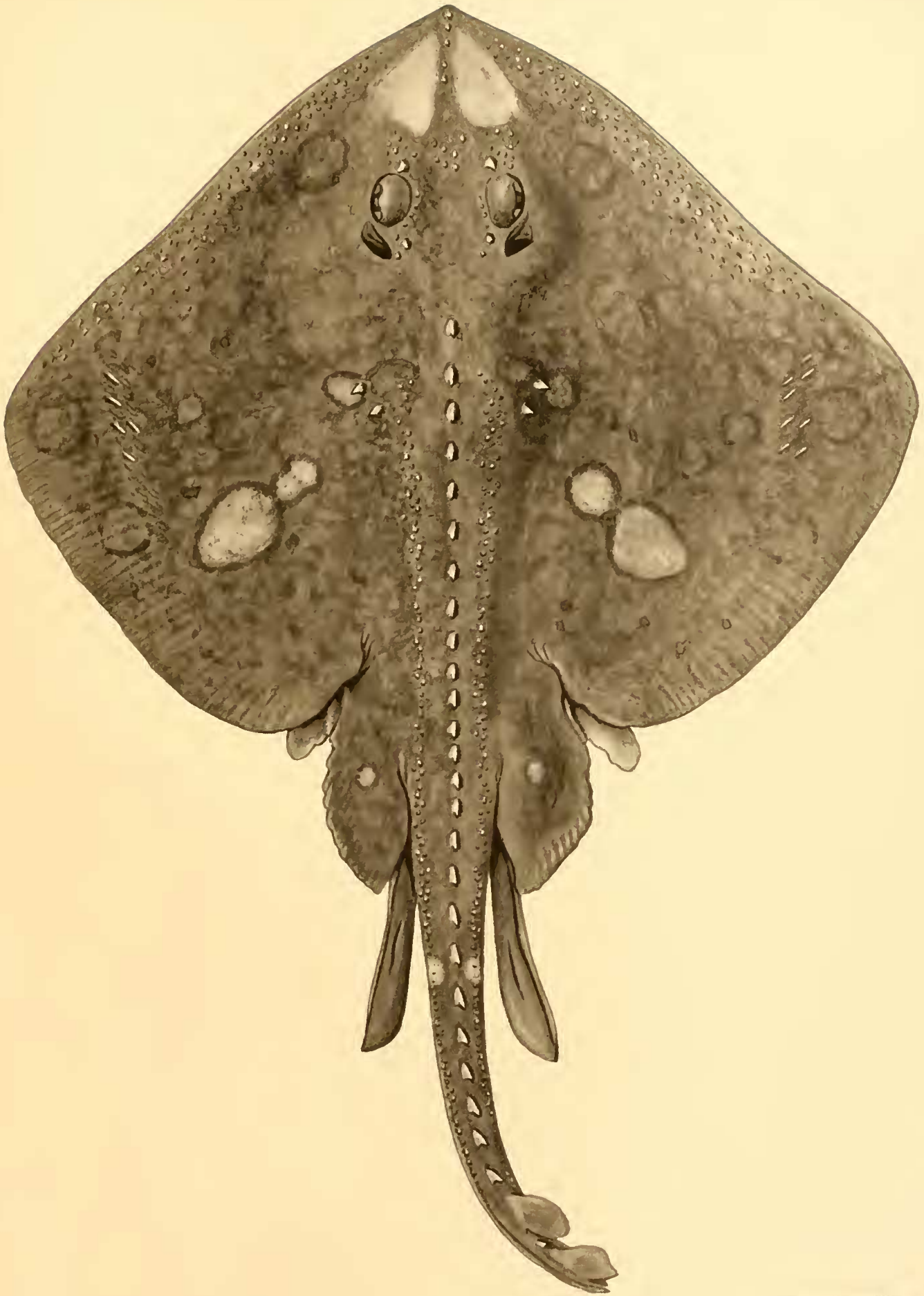

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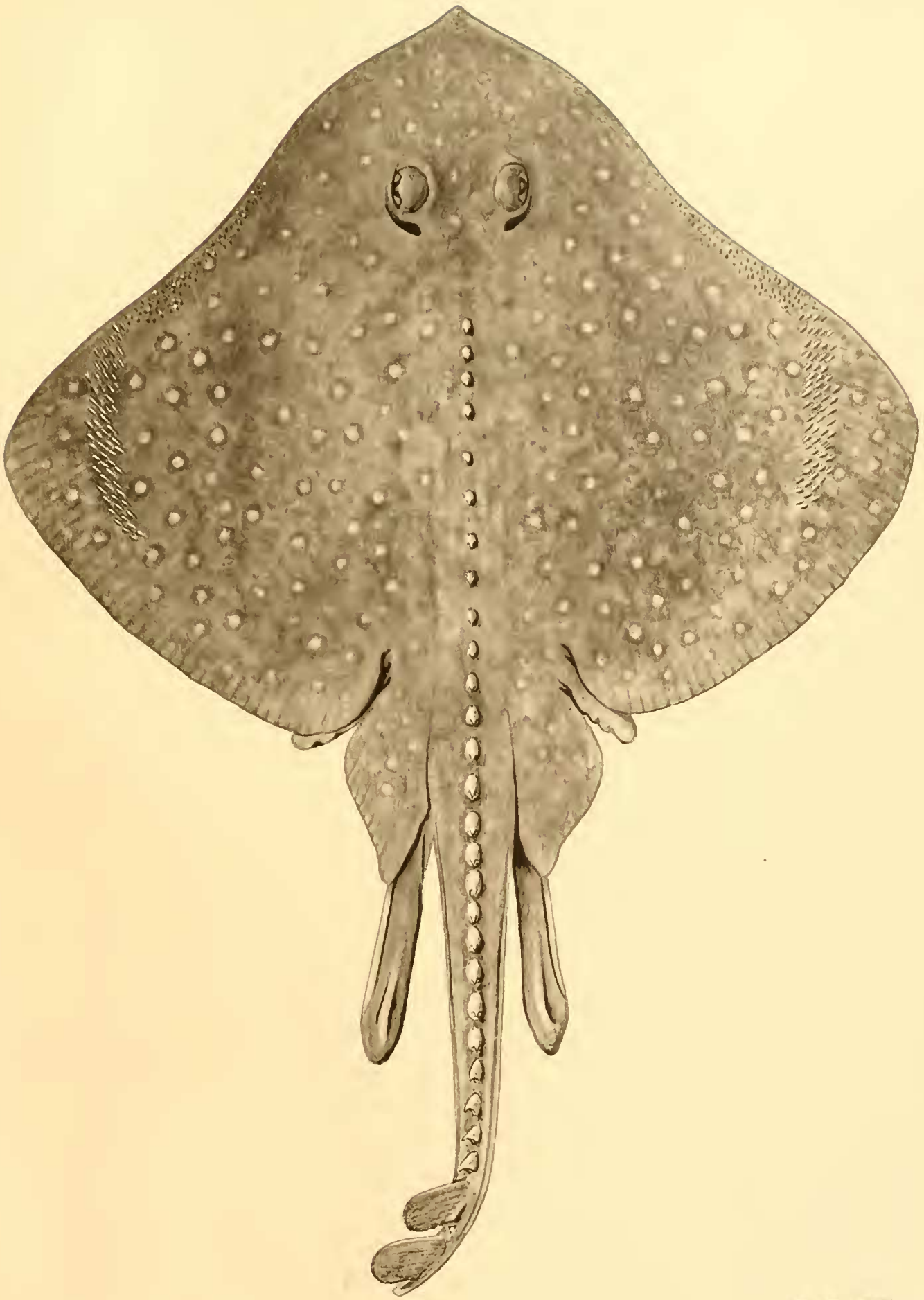
PLATE V

Raja albomaculata (× about $\frac{2}{5}$).



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